Santa Clara Valley
Water District

MEMORANDUM

FC 14 (01-02-07)

TO: Board of Directors

FROM: Ravi Subramanian
Deputy Administrative Officer
Procurement and Operational Services Division

SUBJECT: Board request – I-11-0009 Review of the Black and Veatch contract

DATE: May 23, 2011

The Board requested staff to review the consulting contract No. 3064A awarded to Black and Veatch Corporation on September 26, 2006.

Attached to this memo is a report that outlines the analyses, findings, and suggested recommendations as a result of the review. Please note that the review is limited to a single contract, No. 3064A, between the District and Black and Veatch Corporation and consisted of analyses of documents (hardcopy and electronic) submitted by staff. The review does not include staff or management interviews or responses to the report.

The report includes a set of Appendices consisting of 223 pages which is available as an electronic document by request (please email Maryann O'Brien at mobrien@valleywater.org).

Ravi Subramanian
Deputy Administrative Officer
Procurement and Operational Services Division

Encl: Review of the Black and Veatch consulting contract and documents associated with the Advanced Recycled Water Treatment Plant project

cc: Beau Goldie, CEO
Sharon Judkins, CAO

RS:mo

Review of the Black and Veatch consulting contract and documents associated with the Advanced Recycled Water Treatment Plant project

Ravi Subramanian
Deputy Administrative Officer
Procurement and Operational Services Division
Santa Clara Valley Water District

May 19, 2011

TABLE OF CONTENTS

DOCUMENT HISTORY 3

EXECUTIVE SUMMARY 4

REVIEW PRINCIPLES & METHODOLOGY 7

BACKGROUND 8

ANALYSIS & FINDINGS 11

RESPONSES TO BOARD MEMBER'S QUESTIONS 33

RECOMMENDATIONS 39

APPENDICES

Appendix 1 - RFP Package Cover letter and Attachments A-C

Appendix 2 - RFP Package Other documents

Appendix 3 - RFP Standard Agreement CO323+rev+030206

Appendix 4 - Current Standard Agreement C0323+V0803091

Appendix 5 - Sep 26, 2006 Board Agenda Memo and Original Contract's Scope of Services

Appendix 6 - Invoice Payment History

Appendix 7 - Oct 24, 2007 Board Agenda Memo and Amendment 1's Scope of Services

Appendix 8 - Oct 27, 2009 Board Agenda Memo and Amendment 2's Scope of Services

Appendix 9 - Oct 29, 2010 Board Agenda Memo and Amendment 3's Scope of Services

Appendix 10 - Capital Program's ISO (International Standards Organization) Procedures and Work Instructions List

DOCUMENT HISTORY

No.	Description	Person	Date
1.	Prepared and submitted draft analysis of: A. SOW, requirements, and contingencies (due March 21, 2011) B. Consultant Selection process: From initiation and vendor selection to award and execution – Whether the Request for Proposal (RFP) process was consistent with best practices. This analysis will review the CAS information and associated contract initiation documents. (due March 28, 2011) C. Contract language and its evolution over the period of the contract. (due March 28, 2011)	Ravi Subramanian	Submitted A, B, and C on March 25, 2011
2.	Revised Draft report to include Appendices and submitted to CEO and CAO	Ravi Subramanian	March 27, 2011
3.	Complete draft report (without Appendices) submitted to CEO and CAO	Ravi Subramanian	April 17, 2011
4.	Revised Executive summary and added a question and explanation under section titled "Board Members' questions" and resubmitted to CEO and CAO	Ravi Subramanian	April 25, 2011
5.	Final report submitted to CEO and CAO	Ravi Subramanian	May 14, 2011
6.	Revised the Recommendations section and Executive Summary and submitted final report to CEO and CAO	Ravi Subramanian	May 17, 2011
7.	Edited and submitted final report to CEO and CAO.	Ravi Subramanian	May 19, 2011

EXECUTIVE SUMMARY

The District, as a public agency, must balance the public's interest, its assets, and its needs. These factors translate to implementing capital projects as quickly as possible to meet the District's policy objectives and the public's needs balanced with meeting the statutory, operational, and fiscal objectives. Layered along with these factors are resource issues, capacity issues, project management environment, and practices that may or may not be conducive to timely and fiscally responsible methods of conducting the District's business.

In 2004 the District determined that the Advanced Recycled Water Treatment Plant (ARWTP) project was feasible and began discussion with various stakeholders and collaborators to initiate, plan, design, and construct the facility. The District sought and received State and Federal funding and entered into an agreement with the City of San Jose for cost-sharing of the project. In 2006, the District solicited consultant services for planning, design, and engineering functions and awarded a contract to Black and Veatch Corporation. The project's construction contract was awarded in October 2010 to J.R. Filanc Construction Co.

On October 29, 2010 Director Patrick Kwok requested staff to review the consulting contract awarded to Black and Veatch Corporation (BVC) for the ARWTP project. His concerns pertained to the initiation, administration, and management of the BVC contract. This report is a review of the BVC contract and associated documents.

The report found that District staff worked in earnest to meet the various requirements placed before them. However, based on the documents and other information presented for this review and industry standards and best practices, they were ill equipped to initiate, scope, analyze, monitor, and manage the BVC contract.

BOARD MEMBERS' QUESTIONS

The report identified areas of concerns and paraphrased them into questions and outlined possible reasons for those issues along with confirmations and explanations. The questions were:

1. The budgets start with small contracts and then they expand at later stages. Why do we keep amending contracts?
2. Engineering services should be competitively bid separately and not be included in the Scope of Services of a design consultant.
3. The Black and Veatch contract was for planning, design, engineering, and construction support. Aren't there issues of conflict of interest and lack of competition by having the same consultant perform all those services?
4. Construction services and training services were included in the original contract and later through amendments more monies were requested for the same services.
5. Why do we have two sets of Supplemental Services?
6. The construction phase of the ARWTP project will require $5.8 million (13.7% of total construction cost) in District staff costs for construction management, project management, and support. These costs are excessive and is there any value for the public?
7. "Do not box the Board" into making decisions.

FINDINGS

The review was analyzed based on how the BVC contract was initiated, administered, controlled, and managed. From around April 2006 until around July 28, 2009, i.e., the initiation and planning phases, the Water Utility Planning (WUP) unit in the Water Supply Division managed the BVC contract. From around July 28, 2009 onwards, the design and engineering phases were managed by the Treated Water Project Delivery unit in the Capital Services Division. Listed below are the various findings.

Initiation and Planning phase

1. Inadequate project scope definition and well formulated framework for consultants to bid on a project.
2. Proposal evaluation criteria were not appropriately weighted. The ARWTP project would have benefitted from greater granularity required for such complex projects.
3. The current Contract Agreement could be revised further with additional clarification.
4. Changing circumstances caused project's Scope of Work/Services to be revised.
5. Scope of Services created a potential for conflict of interest.
6. Project management documents not prepared or used on the project.
7. Cursory oversight of project invoices.
8. Lack of project management, contract administration, and control.

Design and Engineering phases

1. Changing circumstances, ARRA funding requirements and deadlines, and other factors led to increased Scope of Services of the BVC contract.
2. Minimal or inadequate project and program management documents.
3. Possible cursory oversight of project invoices.
4. Minimal project management, contract administration, and control of the project.

RECOMMENDATIONS

The review recommends that District perform a review of its project management capabilities and practices for all projects and contracts. After the review if the District finds that other projects and contracts are managed, administered and controlled like the BVC contract, the following recommendations could be beneficial to the District. A few recommendations, like additional sections/language for the Standard Agreement are included with the analysis of the finding. The remaining recommendations are in the last section of the report and are categorized into three areas: Project management and Contract Administration related recommendations, Board related recommendations, and other recommendations.

1. **Project management and contract administration related recommendations**
   These recommendations pertain to requiring project managers to be certified by the Project Management Institute and use PMI's methods, processes, and documents to manage projects. The recommendations were further categorized as:
   - General recommendations
   - Specific project and contract management/administration recommendations
   - Scope of services and Consultant evaluation
   - Cost planning, estimation, and analysis
   - Contract Administration, analysis, and reporting
2. **Board related recommendations**
   These recommendations include:
   - Reporting of all project status beyond the CEO's authority to the Board
   - Bringing projects for Board action only after the full scope has been defined and at the

beginning and end of each phase

- Communicating to the Board of the various analyses along with competing factors,
- Developing and communicating to the Board of the contract phasing road map, the dependencies, and other factors that would provide the Board an advance understanding of the project
- Communicating to the Board and obtain approval of changes in scope, deliverables, schedule, and cost of projects beyond the CEO's authority
- Bringing projects for Board action a minimum of three meetings prior to the required decision. Some projects might require expedited decisions and such projects could be categorized separately but they must meet minimum criteria and approval by the project management committee prior to being put on the Board calendar.

3. **Other recommendations**
   They include investing and employing in information technology solutions (Microsoft Project and Project Server) to manage projects and contracts; adding project management and contract administration in job descriptions and classifications; integrating budget planning, reporting, and approval along with commitment controls, into project management and contract administration of projects; and upgrading PeopleSoft Financials to integrate with project management software and budget planning tools and adequately configure the systems for easy data exchange, project finance reporting, and appropriate internal controls like separation of duties and approval hierarchies.

In conclusion, this review was limited to the management of the BVC contract and it is necessary to acknowledge that costs and the management of projects are critical to any organization. However, they are two important factors amongst others like value to the public, economic benefits, risk avoidance or mitigation, long term impacts, environmental impacts or sustainability, social costs/benefits, and others. Only a comprehensive cost-benefit analysis that includes those factors, along with short and long term costs and benefits and lifecycle costs could yield a full understanding of the value of the expenditure and management of public funds.

Another acknowledgement that is necessary is that of the District and the City of San Jose's efforts in forging the partnership to make the ARWTP project a reality and meet the needs of the County residents. These efforts required extensive work on both sides at the staff, management, and elected official levels. Along with these efforts, District staff spent much effort and time working with the various stakeholders and the public to bring the ARWTP from the conceptual stage as an idea in the master plan to reality. District staff also spent much effort in soliciting and obtaining various funds for the project so that the costs are not only the burden of the County residents, but also shared at the State (Dept of Water Resources) and Federal (American Reinvestment and Recovery Act (ARRA) funds) levels. The project is on track to meet the ARRA funding requirements and complete substantial construction by September 2011. These are important factors in the review of the contract because the positive aspects of a project seem to get lost in the process of identifying opportunities for improvement. There must have also been numerous instances of documented or unwritten nuggets of constructive and beneficial results, events, or decisions, and unfortunately they were beyond the scope of this review.

Lastly, the errors, omissions, misperceptions, or mistakes in this report are solely the reviewer's responsibility and please accept apologies in advance for them.

REVIEW PRINCIPLES AND METHODOLOGY

The completion of a successful contract begins with clearly defined requirements, Scope of Work or Services and a realistic estimate of costs. Award of public contracts requires transparent and unbiased vendor selection processes. Effective and consistent processes and extensive documentation become important tools while the project is being implemented, to ensure that the contract was/is being administered and managed effectively. The processes must be capable of accommodating and ensuring effective management of deviations or changes from the original requirements and plans, and the documents must capture the changes for history, transparency, and decision-making. Although planning for uncertainties is possible in mature project management organizations, a well defined and planned project can also go a long way in keeping deviations and changes to a minimum. Contract administration and project management consistent with best practices and judicious expenditure of public funds resulting in maximum benefit to the public are also elements that underpin the conclusion of a successful contract.

Methodology

This review of processes and controls around the initiation, planning, execution, monitoring and completion of the contract will include the following:

A. Scope of Work, Requirements, Conditions, and Contingencies – Whether the scope and other project information was appropriately defined given the various constraints. The CAS (Contract Administration System) information and associated documents were reviewed for this section of the review.

B. Consultant Selection process: From initiation and vendor selection to award and execution – Whether the Request for Proposal (RFP) process was consistent with best practices. This analysis reviewed the CAS information and associated contract initiation documents.

C. Contract language and its evolution over the period of the contract.

D. Contract Administration and Management – Whether the contract was managed and administered in a manner that was consistent with best practices. This analysis reviewed the project's plan, budget, schedule, deliverables, contract management, amendments, change orders, invoices, funding changes (including ARRA funds) over the contracting period, and related information.

Assumptions

This is a review of documents and information contained in the District's computer systems. District staff were not interviewed and were contacted only for documentation requests and clarification of information. The analysis and recommendations are based on industry standards (Project Management Institute, Construction Management Association of America, National Contract Management Association, American Society of Civil Engineers, Construction Specifications Institute, and the Institute of Management Consultants)and best practices for project management, public contracts management and administration, public works construction, public finance and accounting, organizational behavior and development, and public administration. The reviewer does not have the knowledge or experience in water treatment facility scope development, design, and construction. Please also note that the reviewer joined the District on February 7, 2011, a few weeks before this review. The review does not include any assessment of the project and contract management capabilities of other District staff or of other contracts and their administration.

BACKGROUND AND CHRONOLOGY OF KEY EVENTS

The District has long standing understanding with recycled water purveyors to maintain baseline quantities. Between June 2001 and August 2004 feasibility studies, water quality studies, market assessments, and facilities assessments were conducted to study if and how Advanced Treatment could be used to improve recycled water quality and expand recycled water use in Santa Clara County.

In March 2001, the Santa Clara Valley Water District (District) proposed to the Treatment Plant Advisory Committee (TPAC) to establish a partnership with the San Jose / Santa Clara Water Pollution Control Plant. In July 2001, the District Board adopted water recycling policies and implementation targets to increase recycled water use to meet five percent (approx. 20,000 acre-feet per year (AF/py)) of the County's total water use by 2010 and ten percent (40,000 AF/py) by 2020. In January 2002 the San Jose City Council and the District agreed to a short and long term partnership. In February of the same year, a ten-month collaborative stakeholder process – the South Bay Water Recycling Collaborative - was initiated to develop recommendations for an institutional framework for long term ownership, operation, maintenance, and future expansion of South Bay Water Recycling (SBWR) system.

In 2003, the District along with water retailers and other public and private stakeholders completed a Recycled Water Collaborative Effort (Phase 1 2003) and concluded that enhancing the quality of recycled water would improve the expansion of uses and be protective of uses of recycled water over certain sensitive areas of the groundwater basin. The 2003 Integrated Water Resources Planning (IWRP) Study found similar challenges as the Phase 1 2003 Collaborative Effort and recommended improvements to water quality and expansion of recycled water use.

In 2004, the District completed the Advanced Recycled Water Treatment Feasibility Study and concluded that advanced treatment was technically feasible. Also in 2004, the District Board and the San Jose City Council agreed to collaborate on improving recycled water quality and to seek external funding. Both bodies also decided to expand urban water recycling, particularly in the South County. In 2005, the Urban Water Management Plan outlined the challenges to District's water supplies and identified a shortfall of 130,000 AF of water by 2030. The Urban Water Management Plan of 2005 projected a higher growth in the SBWR system, partly due to proposed developments in the City of San Jose. In the same year, the Silicon Valley Leadership Group (SVLG) approached the District to develop a project to ensure that the County's water supply is reliable for the long-term sustainability of a healthy economy. Additionally, in December 2005, the Board adopted new Ends Policies that encouraged investment in all-weather water supplies and in local supplies.

In 2005, when discussions and planning of the South Bay Water Recycling system ARWTP project started, the proposal was to build a 5 MGD (Million gallons per Day) RO (Reverse Osmosis) facility to improve water quality to a target of 500 ppm (parts per million) of Total Dissolved Solids (TDS) from the average of 720 ppm of TDS that existed at that time. District staff evaluated different case studies ranging from Orange County's Water Replenishment System, San Diego's Water Purification Project, and Singapore's Ne Water Project. A significant conclusion about the successes and failures of the projects was related to public acceptance. From 2006 onwards until 2007, the District and the City of San Jose initiated the Recycled Water Collaborative Effort Phase II, which led to the creation of the Recycled Water Liaison Committee effort of 2008-2009. These collaborative initiatives involved not only evaluating recycled water use to improve the County's water supply reliability, but also public participation and acceptance.

Consultant Contract

On April 13, 2006, Water Utility staff submitted a consultant contract service request (through CAS[1]) to the Consultant Contract Services[2] Unit. On May 8, 2006, the District issued an RFP (Request for Proposal) for consulting services for the following: Plans and Specification (Design and development of construction-ready documents), Engineer's report, and CEQA (California Environmental Quality Act) documentation. The selection panel comprised of staff from the District, the City of San Jose, San Benito County Water District, and the City of Santa Clara.

On September 26, 2006 the District Board approved staff recommendations authorizing the CEO (Chief Executive Officer) to execute a consultant agreement[3] No. A3064A with Black and Veatch Corporation (BVC) for $2,777,960 to provide the previously mentioned consulting services. At the time BVC was awarded the contract, the proposal was to build, near the Santa Clara / San Jose Water Pollution Control Plant (SC/SJ WPCP), a 5 Million Gallons per Day (MGD) plant using microfiltration (MF), reverse osmosis (RO), and ultraviolet (UV) technologies to improve recycled water quality to a target of 500 parts per million (ppm) of Total Dissolved Solids (TDS).

Change of Scope to Increase size

Between the date of execution of the contract in September 2006 and October 2007, Water Supply Division staff and BVC met frequently and conducted engineering investigations. Based on those findings and other information, District staff concluded that a larger 8 MGD became necessary. With the increased size resulting in increased treatment capacity (i.e., filtration benefit) and improved operational reliability of the SJ/SC Water Pollution Control Plant, the City proposed a cost-sharing of approximately $13 million towards the construction of the larger facility. In early 2007, the Department of Water Resources (DWR) awarded $3 million towards the construction of the ARWTP as part of an implementation grant of $12.5 million to various Bay Area agencies.

First Amendment to Contract and ARRA Funds

On October 24, 2007, as a result of the increased size from 5 to 8 MGD (RO), potential ARRA (American Recovery and Reinvestment Act) funding, and associated factors, District staff recommended to the Board to authorize a budget amendment and allow the CEO to amend the BVC agreement No. A3064A in the amount of $900,000. Amendment No. 1 (A3064Aa) was executed and effective the same day. The CAS file No. 4076 reflected the authorization.

In July 2009, the District awarded $8.25 million for the ARWTP from ARRA funds. The awarding agency, the U.S. Bureau of Reclamation (USBR), required that construction contract be awarded before September 30, 2010 and that most of the infrastructure be completed by September 30, 2011.

Planning Study Report

In the same month, in July 2009, the Water Use Efficiency Unit of the District, in conjunction with BVC, prepared a Planning Study Report for the AWT project (No. 91184008). The report evaluated several alternate treatment capacities, treatment processes, and site locations. It made similar recommendations to those approved by the Board on October 24, 2007, but had more specific information (comparative analysis of the sites, confidence level matrix of the alternatives, future recycled water demand data, cost analysis) and other related information.

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[1] CAS File No. 4076.

[2] Please note that the Contract Administration Unit has been renamed as the Consultant Contract Services Unit to clarify its role and responsibilities in the District.

[3] Version CO323 (03-02-06)

In August 2009, the Board adopted Resolution 09-69 specifying its intent to consider undertaking the improvement work of the ARWTP project.

Second Amendment to Contract

On October 27, 2009, due to National Environmental Policy Act requirements as a result of ARRA funding, water quality findings from the SJ/SC WPCP and the resulting compliance with the City's National Pollutant Discharge Elimination System (NPDES) permit, design requirements to surcharge the site for at least three to four months before construction, and other factors, including an alternate site location east of the Transmission Pump Station (TPS), District staff requested the Board to authorize the CEO to amend the BVC agreement No. A3064A in the amount of $1.2 million. The Board approved Amendment No. 2.

On September 28, 2010 the District awarded the construction contract to J. R. Filanc Construction Co.

Third Amendment to Contract

On October 26, 2010 District staff requested the Board to authorize the CEO to amend the BVC agreement No. A3064A in the amount of $2,661,094 to allow BVC to provide engineering services to support the construction of the project. The Board approved Amendment No. 3 in the amount of $2,417,194: authorized the CEO to spend up to $244,000 for supplementary services, and required that the CEO report back to the Board for expenditures over $50,000.

The project broke ground on November 3, 2010 to build an 8 MGD (RO) facility.

ANALYSIS

A. SCOPE OF WORK, REQUIREMENTS, CONDITIONS, AND CONTINGENCIES – PROJECT INCEPTION, FEASIBILITY, AND PLANNING

On April 13, 2006 the District's staff initiated the RFP (Request for Proposal) solicitation process and the RFP was advertised on May 8, 2006 with a closing date of June 8, 2006. The RFP package (Appendices 1 and 2) included: Project background - Attachment A, Location/site map - Attachment B, and Evaluation criteria - Attachment C, provided guidance to respondents. The attachments (Appendix 1) and the other information (Appendix 2) were posted on the District's Contract Administration System which is accessible to consultants.

Two companies submitted proposals: Black and Veatch Corporation and CDM.

Finding 1. Inadequate project scope definition and well formulated project management framework for consultants to bid on a project.

In 2003, the District completed an Advanced Recycled Water Treatment Feasibility Project and decided on the proposed facility to be located within the "footprint of the South Bay Water Recycling's Pump Station…" (See Appendix 1: Attachment A, Project Background, Section 2. Objective). The 2003 Feasibility Project established the need and the potential benefits of the ARWTP, i.e., business case for the ARWTP. District staff, with the City and other County stakeholders arrived at the decision that the ARWTP is necessary to meet the County's needs.

The 2003 Feasibility Project was not intended for and did not determine the scope, design, and construction of an advanced recycled water treatment facility. It is important to highlight this distinction, i.e., of a facility that is or could be feasible versus the scope/design of the actual facility itself, because this factor has bearing on how the BVC contract was/is managed. The feasibility study was to establish whether an ARWTP was necessary, whereas, the scope, design, and construction of the ARWTP requires "specialized knowledge" of treatment plant design, feed water and product water quality standards, site-specific matters, treatment systems, filtration systems, pump stations, water storage systems, chemical storage and release facilities, waste equalization systems, pipeline systems, HVAC, instrumentation and controls, and other areas. District staff solicited consultant services for such specialized knowledge because they lacked the expertise to plan, design, and construct an ARWTP.

The tasks described in the "Preliminary Scope of Work" on CAS were: 1. Project Management, 2. Refine Project Description, 3. Engineering investigations leading to an Engineer's Report, 4. Investigations leading to the appropriate CEQA document, 5. Contingent Task: Project Design – Plans & Specifications and Estimated Construction costs, 6. Contingent Task – Permit Acquisition, 7. Contingent Task – Bid & Award Construction Services, 8. Contingent Task – Construction Services Submittal review, and 9. Contingent Task – Training Services including Operations & Maintenance Manuals and Instructions. Tasks 1-7, "due to external timeframe issues"[4] were under an "expedited timeline … planned for approximately 15 months from the 'Notice to Proceed' date" and tasks 8 and 9 were not included in the 15-month timeline.

Lastly, and most importantly, there was no evidence of integration of managers or staff from other units or divisions in the scoping and planning of the project. For example, treatment plant managers, engineers, or technicians were not part of the discussions of the team of District staff in planning and scoping the project. Likewise, plant facilities maintenance staff, managers, and others do not seem to have been included in the project.

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[4] The Scope of Work did not identify or provide any further details on the "external timeframe issues."

Project Scope: The Preliminary Scope of Work tasks and their descriptions demonstrated that staff were not equipped to define, scope, develop details, engineer, and construct an ARWTP. Other than a few process unit components and process flow information mentioned in Attachment B – Location/Site Map, there were no details for the ARWTP.

Task 1, Project Management, required the consultant to provide project administration and management services. It also required the consultant to monitor the project budgets and schedules. The Task included language that is normally in a Standard Agreement or as a separate "Project Conditions" document.

Project management, as a consultant provided task is ubiquitous for most projects. However, requiring the consultant to monitor project budgets and schedules enables opportunities for misuse and mismanagement and calls into question the use of those funds as far as District staff roles, responsibilities, and the hours charged to project or unit budgets are concerned.[5]

Task 2, Refine Project Description, confirmed that District staff needed assistance to describe the project, define the project objectives, and determine environmental concerns related to the project. The deliverables under Task No. 2 were to be used as the basis to define the parameters of technical analysis, environmental analysis, and field investigations. If staff needed assistance to describe the project, they might not know what else needs to be done to accomplish the objectives of the project. A recital of the main process units for the ARWTP as listed in Attachment B does not constitute knowledge to develop the scope, design, and construct the ARWTP.

Tasks 3-9 had minimal information because they were dependent on Task 2.

The commonly cited reasons for soliciting consultant services are lack of staff availability and/or expertise (in Recycled Water Facility design, engineering, and construction). Currently, a statement to that effect is considered acceptable to move forward and hire consultant services. This review did not assess whether there is a district-wide practice; if so, the practice/statement would benefit a revision because the statement does not convey whether a comprehensive workload and expertise analysis was completed and if so, whether the results support that statement. The reviewer, as the District's procurement designee, found that requests for consultant services submitted to the Consultant Contract Services program do not contain a detailed analysis of all staff in the division/unit, the related projects and the hours being spent on those projects, the availability of those staff, a skill inventory, and other information that could provide a comprehensive workload and expertise analysis for the immediate, short, and long terms. Competency, capability, and knowledge matrices of staff are also not submitted to make a determination if all the services need to be solicited or if some can be carried out by in-house staff and managers.

In May 2002, the District initiated the use of ISO (International Standards Organization) procedures and work instructions (see Appendix 10) for capital projects, including development of project documents. The procedures and instructions have been revised over the years, however, they are for high level tasks and do not go into the detail required for a complex project like the ARWT project. For example, Section IV Project Scope of Work, in the Project Proposal Guidelines (W72101) document, states the following:

> *[Address all phases of the project: Planning Phase, Design Phase, Construction Phase and Close-Out Phase. Use the pre-identified major work elements; Project Management,*

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[5] *Please note that these inferences pertain only to the BVC Scope of Services document and not to any other contract or current practice at the District. The reviewer did not interview District staff to confirm or verify the inferences.*

Planning Study, Environmental Review and Regulatory Permit Acquisition, Design and PS&E, Land Acquisitions and Construction. Identify and briefly explain, if necessary, the deliverables and critical tasks/activities for each major work element.]

There was no further information to develop the Scope of Work.

Project Phases: The tasks listed in the Preliminary Scope of Work document for the ARWTP project demonstrate an ill-defined understanding of construction project phases. The ISO procedures and instructions also guide project managers at a high level and provide instructions for four phases: Planning, design, bidding, and construction phases. Each of the four phases have detailed instructions that could have benefitted the Scope of Services for the AWRTP project. It is also essential to note that ISO procedures are very important for any organization; however, ISO procedures for project management in themselves are not a complete framework or package.

At a high level most projects have similar phases: planning, design, bidding, and construction phases, however, complex and high dollar value projects require much further detail that require many levels of sub-phases. For example, the entire ARWTP project could have been divided into the following phases:

1. **General Planning phase** – Master plans, capital improvement plans, urban plans, redevelopment plans, regional plans, short and long range plans are considered in arriving at the need for the project.

2. **Preliminary Investigations phase** – These include analysis of conditions, comparative analysis, alternative analysis, cost (project design and development, construction, operating and maintenance, etc.) analysis, project financing and revenues, environmental impacts, return on investment and value, to determine whether the project might be feasible.

3. **Feasibility Study and Conceptual framework phase** – Based on the information and data collected in the preliminary investigations phase additional data specific to the project is collected and analyzed. These include topographic surveys, geotechnical data, hydrological data, materials engineering information, land use information, environmental requirements, jurisdictional information, economic analyses, public engagement, funding sources, statutory requirements, time constraints, seasonal factors, and other information. At this stage the project's scope is developed along with economic and technical considerations. All this information is used to develop alternative and options analysis along with conceptual sketches, layouts, preliminary schedule, design criteria, and approximate costs.

4. **Preliminary Design Phase** – Preliminary design documents are prepared along with an outline of specifications, project requirements, scheduling, easement or eminent domain issues, and project costs.

5. **Final Design Phase** – After approval of the preliminary design phase information, construction drawings and specifications are prepared along with engineering data, regulatory requirements, environmental assessment and impact statements, bid documents (standard agreement, general conditions, supplementary conditions, insurance and bonding requirements and construction documents), public participation documents, costs, and schedule.

6. **Bidding and Contract Negotiation Phase** – After the bids are issued and proposals are received and evaluated, the qualifications of prospective contractors, subcontractors, and suppliers are

evaluated. The contractor is selected and the terms and conditions along with costs and requirements are negotiated before award of the contract.

7. **Construction Phase** – This phase involves the implementation/construction of the project based on the final designs and specifications, compliance requirements, site conditions, tests and inspections, RFI (request for information), RFC (request for clarification), and change orders. Contractors often divide this phase into many sub phases: pre-construction planning, construction, and post-construction. Final as-built drawings are prepared along with performance tests, initial system operations, and final inspections.

8. **Operation Phase** – Towards the completion of the construction phase, a manual for operation and maintenance is prepared and operations staff are trained on maintaining the completed facility. This is also the stage when final punch-list or walk-through inspections are performed to ensure that deficiencies are corrected prior to the end of the warranty period.

9. **Supplemental Services** – Often there are services that don't fit completely into one phase or can be determined only after the completion of certain phases. Some examples include construction supervision, ensuring compliance with final design and specifications, transfer of knowledge throughout the project through training and documentation, value engineering studies, project audits, expert witness testimony, reporting to elected bodies and the public, and others.

Projects often have unanticipated tasks that must be addressed and undertaken to avoid delays and costs. In public works projects, elected bodies delegate the authority, with certain limits, to the Chief appointed official to decide and implement unanticipated tasks. This is a common practice because the public notification, hearing, and decision-making process often takes 6-8 weeks and some tasks might require attention immediately. Public works contracts often include an 'unanticipated tasks' category and dollar amount within the appointed official's authority limit.

The BVC contract would have been better executed if it had been limited to either the Preliminary Investigations and Feasibility Study and Conceptual Framework phases or the Preliminary and Final Design phases along with Supplemental Services which should have been included only as amendments to the contract and not in the initial Scope of Work/Services. The analysis and findings in Section D Contract Administration and Project Management of this document explain why the BVC contract's scope should have been separated.

Project Management: Evident in the RFP documents was a lack of definition of the project management framework, terminology, definitions, processes, components, sequencing, and other elements.

One of the fundamental aspects of implementing projects is the concept of progressive elaboration. Progressive elaboration of project characteristics must be carefully coordinated with clear project scope definition, particularly if the project is performed under contract. When clearly defined, the scope of the project - the work to be done - should remain relatively constant even as the project characteristics are progressively elaborated.

Project inception and preliminary planning require: Careful and meticulous definition of needs, goals, objectives, targets, and parameters (Project Scope); Project management strategy; Project phasing; Alternatives analysis (including no option); Standards; Preliminary specifications; and the many necessary components of PMI's (Project Management Institute) framework to manage projects:

- **Project Integration Management** describes the processes required to ensure that the various elements of the project are properly coordinated. It consists of project plan development, project plan execution, and integrated change control.
- **Project Scope Management** describes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. It consists of initiation, scope planning, scope definition, scope verification, and scope change control.
- **Project Time Management** describes the processes required to ensure timely completion of the project. It consists of activity definition, activity sequencing, activity duration estimating, schedule development, and schedule control.
- **Project Cost Management** describes the processes required to ensure that the project is completed within the approved budget. It consists of resource planning, cost estimating, cost budgeting, and cost control.
- **Project Quality Management** describes the processes required to ensure that the project will satisfy the needs for which it was undertaken. It consists of quality planning, quality assurance, and quality control.
- **Project Human Resource Management** describes the processes required to make the most effective use of the people involved with the project. It consists of organizational planning, staff acquisition, and team development.
- **Project Communications Management** describes the processes required to ensure timely and appropriate generation, collection, dissemination, storage, and ultimate disposition of project information. It consists of communications planning, information distribution, performance reporting, and administrative closure.
- **Project Risk Management** describes the processes concerned with identifying, analyzing, and responding to project risk. It consists of risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response planning, and risk monitoring and control.
- **Project Procurement Management** describes the processes required to acquire goods and services from outside the performing organization. It consists of procurement planning, solicitation planning, solicitation, source selection, contract administration, and contract closeout.

Most of the component processes in the framework do not require specialized knowledge or expertise in advanced recycled water treatment plant design, scoping, or construction. The framework provides structure, progressive steps, opportunities to anticipate changes and how to manage them, and ultimately it is a comprehensive toolkit to manage time, money, and people. The framework provides guidance to establish elements of the RFP documents.

RFP documents, devoid of the required details, provide opportunities in the later phases for increased costs and delayed schedules. The lack of such a framework along with specific details about the scope, design, or construction leaves the entire project open to interpretation and ambiguous responses. The lack of information also leads to undefined resources – funds, time, and people – along with missed objectives, targets, and returns on investments and value to the public.

B. CONSULTANT SELECTION PROCESS

Attachment C (See Appendix 1) – Proposal evaluation criteria and Rating form – listed the various criteria to evaluate and score proposals from consultants. The criteria and weights (in parenthesis) were: Firm's qualifications and experience (25%), Project team expertise (25%), Scope of Work/Strategy (15%), Environmental expertise (15%), Project Management (15%), and Compliance with criteria for submittal (5%).

The RFP package also included a document titled, Proposal Content Instructions and Experience Requirements[6] (Appendix 2) and another document called, Consultant Financial Capacity Evaluation. There were no rating criteria or methodology associated with the latter document.

The District held the pre-proposal workshop for prospective respondents on May 22, 2006. The final proposals were due on June 8, 2006. The District received proposals from BVC and CDM. Oral interviews were held on June 21, 2006. The panel for both the proposal review and the oral interviews comprised of three staff from the District, and one each from the City of San Jose, San Benito County Water District, and the City of Santa Clara. The consultant interviews had 5 questions ranging from, "What is your approach to balancing the interests of the two agencies (South Bay Water Recycling and the District) involved in this project?" to "Please explain what benefits this project brings to the agencies and to the community. What suggestions would you make to increase and maximize the benefits of this project?"

BVC scored 8.395 for its proposal, 8.408 for its proposal and interview, and received 3% SBE credit which resulted in a final score of **8.708**. CDM scored 8.475 for its proposal, **8.645** for its proposal and interview, and received no SBE credit. It is difficult to speculate the reasons behind such high numbers and the relative closeness of the two proposals without a thorough examination of the proposals and the panel.

BVC was selected as the consultant and on September 26, 2006 District staff requested the Board to authorize the CEO to execute a consultant agreement with BVC for $2,777,960 along with the budget adjustment.

On November 1, 2006, after all prerequisites were met, District staff issued a Notice of Award to BVC and on December 5, 2006 issued the Notice to Proceed.

Finding 1. Proposal evaluation criteria were not appropriately weighted. The ARWTP project would have benefitted from greater granularity required for such complex projects.

Evaluation criteria and weighting: A firm's qualification and experience getting equal weight as the team's expertise seems redundant because the team could be the firm or vice versa. Also, using 50% of the weights for those two categories limits the evaluation of other necessary elements of a proposal. For example, "Scope of Work or Strategy" is misleading because it signifies that one can be replaced with the other or one or the other will be acceptable. Equal weights of 15% for three of those criteria demonstrate a gap in understanding of their relative importance and their relative priority. The project management criterion's directive states, "Rate the consultant's ability to manage the needed resources to complete the work, including quality control." This direction could lead to could be difficult to rate because it cannot be evaluated based on what a consultant has proposed on paper. Ability and quality control can be measured and evaluated only after monitoring them while a project is being design and constructed. Compliance with criteria for submittal[7] should not be an evaluation criterion that is weighted, it should be a screening/eligibility/acceptance criteria.

Other criteria that could have been used are: performance/payment bonding capabilities, performance metrics from projects completed in the last 5 years, complexity of projects implemented, Return on value of the proposal, Return on investment of the proposal, and others. Risks and shortcomings in proposals could also be used in conjunction with the above criteria to score responses.

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[6] This document has been improved and the current version (CO006 (02-22-06)) is titled, Proposal Content Instructions and RFP General Conditions.

[7] This criteria has been renamed Conformance with Proposal Submittal Guidelines in the current version (CO006 (02-22-06)) of the document, Proposal Content Instructions and RFP General Conditions.

Often, not all standard criteria are valid or applicable for all projects/proposals. Overriding criteria, tradable criteria, or optional criteria are used to provide the necessary refinement in making decisions. This is not an easy method to counter protests, so it has to be used with extreme caution.

Proposal Content Instructions and Experience Requirements: In the document with the same title (Appendix 2), respondents were asked to direct their questions to one of two staff members and their email and telephone contact information were provided. Such a practice of questions being directed to either one of two staff members increases the chances for inconsistent responses. Verbal responses, if unrecorded or transcribed into FAQs (Frequently Asked Questions), might leave out respondents who did not contact the District. Moreover, if the respondents are explicitly not directed to send their responses only in writing, a subsequent protestor could claim that other respondents received more information. There were no protests on the selection process for the consulting services on the ARWTP project.

In the same document, under the section titled, 1. Proposal Content, A. Work Plan, proposers were "allowed to suggest modifications to the preliminary scope of work which may be incorporated into the approach of the most relevant tasks of the present outline." Allowing proposers to change the scope of work in their responses makes the evaluation very challenging and inconsistent.

In the section titled D. Project Management /Hours Per Task/Level of Effort/Change Control, "close coordination between the consultant team and the agency project team" is expected. However, the sentence does not go further and ask the consultant to provide information about the anticipated time commitment, qualifications, or experience of District staff.

In the section 3. Use of Sub-consultants, the documents does not require District approval of sub-consultants. This review recommends that the District exercise the right to approve sub-consultants.

Note: The document currently used by the District, titled, Proposal Content Instructions and RFP General Conditions is a much improved document; it is much more user-friendly and has clear categories like General instructions for use of CAS, Specific instructions for the subject RFP, and General conditions governing the procurement. The proposal evaluation criteria along with the oral interview criteria are in the last section and have more clarity but the document continues to have similar weighting issues. Scores were computed by multiplying the rating with weight. This is a simplistic approach which leads to high scores for criteria that might have less value or priority.

C. STANDARD CONSULTANT AGREEMENT [VERSION CO323 (03-02-06) WAS USED FOR THE BVC CONTRACT (HEREINAFTER '06 AGREEMENT') AND THE VERSION CURRENTLY IN USE IS CO323 (08-03-09) (HEREINAFTER '09 AGREEMENT')]

Finding 1. The current Contract Agreement language could be revised further with additional clarification.

The 09 Agreement (Appendix 4) is very similar in format and structure to the 06 Agreement (Appendix 3). Both have the same eleven sections: Scope of Services, Duties of Consultant, Duties of District, Fees and Payment, Time of Beginning and Schedule for Completion, Changes in Work, Delays and Extensions, Resolution of Disputes, Miscellaneous provisions, Indemnification, and Insurance.

The striking improvement between the 06 and 09 Agreements is the use of the more obligatory "must" in the latter and "shall" in the former. The 09 Agreement does however continue to repeat some statements that need further improvement. For example, in Section II, Duties of Consultant, the consultant is prohibited from *"undertaking any work beyond the scope of the Agreement unless such additional work is approved in advance in writing by District. The cost of such additional work [shall/will] be reimbursed to Consultant by District on the same basis as provided in Section IV unless otherwise specified."* The statement allows for the approval to initiate or begin additional work, but commits the District to payment without regard to acceptance of completed work to the satisfaction of the District's requirements or to established standards or criteria. The statement could be more comprehensive and state that any work approved by the District must meet its acceptance criteria and industry standards, as specified in Section IX, Miscellaneous Provisions. It could also state that the District will reimburse the Consultant only after acceptance and approval of the completed work.

In the same section, the sentence, *"Consultant is required, at District's request, to meet with District staff regarding performance of the Scope of Services,"* is between two paragraphs - one dealing with negligence, errors, or omissions, and the other with the California Labor Code. The sentence could either be in a category titled, Project Communication or under Consultant Performance, or Scope of Services. The sentence could also be more specific and state the District's requirements and objectives and the consultant's obligations.

The 09 Agreement has a much improved Equal Opportunity and non-discrimination section. However, both Agreements could include and require sub-consultants and others engaged to provide services or labor to the District, to also comply with all federal, state, local laws and regulations.

In Section IV, Fees and Payment, both Agreements state that after fifty (50) percent of the work has been completed, the District may, at its discretion, make the remaining payments in full and not retain ten (10) percent of the each payment. This language could put the District at risk of having to accept unsatisfactory work and being left with not much recourse to be reimbursed for the remedy. The better practice would be to retain amounts for the full term of the contract and make payments in compliance with the California Prompt Payment Act, Public Contract Code sections 10261.5-10262.5 and sections 7100-7200, and Business and Professions Code section 7108.5. Per these regulations, for public works of improvement, organizations are required to make progress payments within 30 days of submittal of an undisputed payment request and make all retention amounts within 60 days of completion of the contract.

Payments from prime to sub contractors are subject to Business and Professions Code section 7108.5 unless modified in writing. The Fees and Payment language could include compliance with that section without any modification.

In Section VI, Changes in Work, both Agreements do not make any statement of consultant responsibility and District's choice to pursue appropriate action for work that was not authorized but led to damages or injury to the District. Moreover, both Agreements continue to keep the Termination clause under "Changes in Work" in section VI as opposed to a separate Termination section.

In Section VII, Delays and Extensions, both Agreements remain the same and they do not make any statement about delays as a result of consultant's actions whereby, the District might take necessary steps to remedy the situation, including withholding of retentions amounts, pursuing claims from the consultant's surety company, or lodging complaints with appropriate authorities.

In Section VIII, Resolution of Disputes, both Agreements remain the same and the last few sentences about mediator selection and ground rules need further refinement. Both aspects, selection and rules, are to be "agreed upon by the parties." Leaving parties to agree when they are in dispute is an added burden on the dispute. A better statement would prescribe a selection process and definitive ground rules. Other agencies' Agreements have stated that mediation will be as per JAMS (Judicial, Arbitration, and Mediation Services) or AAA (American Arbitration Association) rules.

Both Agreements' Section IX, Miscellaneous Provisions, is the same. The couple of areas that could be revised are as follows: the District could reserve the right to approve any member of the Consultant team, not just the Project Manager; and Consultant must correct deficiencies before the deadlines established by the District, not "as soon as possible." The prohibition of giving gifts to District employees could also be revised and made more stringent. Currently, the Agreements obligate the Consultant to honor this policy by not sending or bringing gifts to the District. One could add that violation of the policy could result in legal action and reporting to the Fair Political Practices Commission.

Other sections that could be added are:

1. Amendment: No amendment or variation of the terms of this Agreement shall be valid unless made in writing, signed by the parties and approved as required. No oral understanding or Agreement not incorporated in the Agreement is binding on any of the parties.
2. Disputes: Contractor shall continue with the responsibilities under this Agreement during any dispute.
3. Governing Law: This contract is governed by and shall be interpreted in accordance with the laws of the State of California.
4. Unenforceable Provision: In the event that any provision of this Agreement is unenforceable or held to be unenforceable, then the parties agree that all other provisions of this Agreement have force and effect and shall not be affected thereby.
5. Small Business participation and reporting requirements: If for this contract the consultant made a commitment to achieve small business participation or received credits, then Contractor must report monthly or at an agreed upon period, the actual percentage of small business participation that was achieved. (Govt. Code § 14841). The contractor agrees to maintain the small business participation for the entire duration of the contract.
6. Loss Leader: If this contract involves the furnishing of equipment, materials, or supplies, directly or indirectly, then the following statement is incorporated: It is unlawful for any person engaged in business within this state to sell or use any article or product as a "loss leader" as defined in Section 17030 of the Business and Professions Code. (PCC 10344(e).)
7. Living Wage and Prevailing Wage: The contractor shall adhere to the District's living and prevailing wage policies.

D. CONTRACT ADMINISTRATION AND PROJECT MANAGEMENT

After the BVC contract was approved by the Board on September 26, 2006, the Water Utility Planning (WUP) unit in the Water Supply Division was responsible for managing and administering the BVC contract until around July 28, 2009. From that date onwards the Treated Water Project Delivery unit in the Capital Services Division was responsible for the BVC contract and the project. This review will address the BVC contract administration and project management issues as two chronological sections within those two units.

From September 26, 2006 until around July 28, 2009

The contract approved by the Board included the attached Scope of Services (Appendix 5) that included the following tasks and proposed costs proposed by BVC. Each task included a narrative along with deliverables and assumptions.

No.	Task	Cost
1	Project Management	$235,175
2	Preliminary Design Service and Engineers Report	$1,093,100
3	Project Design	$1,202,100
4	Permit Acquisition	$20,055
5	Construction Services	$181,310
6	Training Services, including O & M (Operations and Maintenance) Manuals	$46,220
	TOTAL	$2,777,960

From the kick-off meeting on October 13, 2006 until August 11, 2009, BVC held various meetings with staff and representatives from the District, City of San Jose, SJ/SC WPCP, and SPI (Separation Process Inc.). The meeting discussions involved the Recycled Water Program, Advanced Recycled Water Feasibility Study, the ARWTP Scope of work proposed by BVC, the project schedule, Membrane Technology and Procurement Process, Disinfection Strategies, Siting Alternatives, Membrane Bioreactor Technology, Capacity Analysis, Reverse Osmosis Reject Management, CEQA (California Environmental Quality Act), Hypochlorite Generation, Building Architecture, Construction Cost Options, O and M Costs, Project schedule, RO Disposal and NPDES permitting, Geotechnical investigation, Engineering Report, City and District Agreement, Tie-in to the WPCP and TPS (Transmission Pump Station), MF and UV procurement, ARRA funds, and project activities.

Finding 1. Changing circumstances caused project's Scope of Work/Services to be revised.

The project, after the 2004 Advanced Recycled Water Treatment Feasibility Study's conclusion that advanced treatment was technically feasible, seemed to be in a constant state of flux.

Some of the factors include:

- Revised targets from year 2010 to 2015 flows.
- Revised TDS goals from 720 ppm to 500 ppm.
- Increased sizing from 5MGD to 8MGD.
- Site changed from near the SC/SJ Water Pollution Control Plant to the Transmission Pump Station.
- District and City of San Jose agreement, including funding, operations, and maintenance costs.
- State of California Department of Water Resources funds
- American Recovery and Reinvestment Act funds and requirements (NPDES permits, water quality and toxicity issues)

The BVC contract was executed in September 2006 and at the time District staff included project description/definition as one of the requirements. When the District is unable to define the project, let alone the full scope of work associated with a project, such an approach calls into question whether a project can be appropriately estimated for costs, time, and other resources.

The question that every project must answer is, "how well can it be planned and scoped to anticipate changing circumstances?" For the ARWTP project, factors like targets, flows, and demand that lead to increased facility size could have been anticipated and included into the scope. However, when those decisions are made after the project has been started, the scope is bound to change resulting in increased costs and time. The District is familiar with the State's funding process and requirements and could have anticipated the work and time involved. Similarly, it is familiar with the Federal funding process and requirements and could have anticipated the need to meet NEPA, NPDES permit (by the City of San Jose), and other requirements. It might have been possible to anticipate during the application process that the ARRA funds might require to begin construction soon (maybe not by November 2010), because ARRA funds were to be used primarily on 'shovel-ready' infrastructure projects. This is a debatable issue because it hinges on the determination of whether the District's project was indeed 'shovel-ready' and whether it could meet the requirements within the deadlines for an ARRA funded project. Additionally, there could be other factors that were not evident in the information submitted for this review that exacerbated the situation whereby staff had little choice but to make expedient decisions. However, what the District could not have predicted is whether it would receive funding or not.

Along with predictable and unpredictable factors, the District must consider various competing factors in achieving its mission, goals, objectives, and satisfying the needs of the public. Some of those competing factors are related to the alignment of the Board and District staff. Both must have a clear understanding of the balance between directions, expectations, and results. For example, if the Board's intention/direction is to implement projects quickly, then it is the responsibility of staff to present the factors - assumptions, risks, limitations, and capabilities - that could or could not meet the Board's intention/direction. These must be weighed against staff capacity, expertise, and availability, along with funding, interagency agreements, and other factors.

One of the underlying aspects that increased the impacts resulting from changing circumstances is the lack of definition and scope of the ARWTP project. The scope of the project, required phases, project components, and other associated project management knowledge could have helped District staff anticipate most elements of the project's roadmap and presented the Board with thorough analyses of their impacts.

Finding 2. Scope of Services created a potential for conflict of interest.

BVC's contract included initial scoping investigations to define and plan the project, then design (including engineering design) the project, and later provide pre and post construction services. As a result of the gap in understanding the scope of the project, BVC's Scope of Services included responsibilities that created a potential for conflict of interest.

The BVC contract could have been limited to either the Preliminary Investigations and Feasibility Study and Conceptual Framework phases (hereinafter Project Planning Phase) or the Preliminary and Final Design phases (hereinafter Design Phase) along with Supplemental Services. Having BVC involved in both Planning and Design phases especially when the scope of the project was undefined and there were numerous changing circumstances, created opportunities for scope creep and future scope augmentation. For example, in the BVC contract, Task 5 for Construction Services and Task 6 for Training Services were prematurely included in the Scope of Work. The project design and specifications were not finalized to provide any guidance for the work that was necessary in Tasks 5 and 6. If staff do not have full comprehension of the scope of the project, subsequent phases are difficult to define. Often subsequent phases are dependent on intermediate phases and must be considered/defined only after finalization of the intermediate phases.

If District staff take a less than active role and/or do not have the necessary capabilities, planning and design phases of the project must be performed by different companies to avoid any conflict of interest. Currently, District staff do not award contracts for planning and design to the same company.

However, the planning and design phase services could be provided by one consultant if the scope of the project and phases are well defined, the conceptual framework is fully developed, and if the project was completely under the control of qualified and experienced staff with subject matter expertise, extensive project specific, project management, program management, and portfolio management experience. The Scope of Services for the consultant would also need to be thorough and well defined so that scope creep and augmentation does not occur.

The benefits of having a single consultant provide those services include lower costs, lower learning curve, quick turnaround for project documents, tighter project schedule, possibility for parallel tracking of phases, continuity of project knowledge until completion, and others.

Engineering reports have a unique role and function in projects. Often the design engineer is the engineer of record and prepares and certifies the report. In the ARWTP project BVC is the design engineer and engineer of record. It is necessary to have the same engineer design and certify the report so that the engineer can be held responsible for deficiencies, discrepancies, or deviations from industry standards or statutory requirements. During the construction phase, the engineer of record certifies that the project was constructed in compliance with the engineer's drawings and specifications. However, if the final designs are not thorough and complete (not in the scope of this review), errors and omissions should be the responsibility of the engineer and not charged to the District. Difference of opinion or interpretation between engineer and contractor will require the District staff or a Dispute Resolution Board to be the arbiter and provide appropriate direction.

Finding 3. Project management documents not prepared or used on the project.

Project management documents confirm the project management framework, components, terminology, definitions, processes, sequencing, and other elements. These elements determine the methodologies and practices that must be applied to projects. At some organizations, even when there is no formal Project/Program Management Office, project managers apply stringent project management methodologies and practices to projects.

Project management documents commonly used in the initiation and planning phases of projects are: Project charter, SWOT Analysis, Scope Statement, Work Breakdown Structure (WBS), Project Network Diagram, Gantt Chart, Milestone Chart, Time-scaled Arrow Diagram, CPM (Critical Path Mean) Diagram, Critical Chain Schedule, Hierarchical Schedule, Line of Balance, RAM (Responsibility Assignment Matrix) or RACI (Responsible, Accountable, Consulted, and Informed) Matrix or LRC (Linear Responsibility Chart), Cost Planning Map, Cost Baseline document, Estimate (Analogous/Parametric /Bottom-up) documents, Project Quality information (Flowcharts and Affinity diagrams), Risk Planning tools (Response Plan, Monte Carlo analysis, Decision Tree), Stakeholder Matrix, Skill Inventory and Expertise Analysis, and other documents. Very few of these project management tools/documents are included in the District's ISO procedures and work instructions (Appendix 10).

Most of the documents presented for this review were meeting minutes with action item lists and copies of slide presentations that were prepared by Black and Veatch Corporation. Those documents also did not provide the full scope of information or documents that are normally used in projects. The BVC contract included a Scope of Services and a Gantt Chart. A review of the documents and other information used during the initiation and planning phases of this project and presented for this review demonstrated that minimal to no industry standard project management methodologies, practices, or tools were used by staff to the management of the ARWTP project.

The District's ISO procedures or work instructions for capital projects contain project management documents which were also not used for this project. ISO procedures and work instructions for project management are important, however, there are many additional project management competencies, elements, and tools that are essential for successful management of projects.

Finding 4. Cursory oversight of project invoices.

Project invoices and payments are not just the responsibilities of an accounting unit, they are also tools to reconcile deliverables and the value of projects. When an analysis is done to determine how long the deliverable should have taken to complete and when invoices are compared to the deliverables, one could determine whether the expected value was received or achieved from the completion of those tasks. The finding and analysis below demonstrate that such analyses or comparisons were not performed.

Appendix 6 is a copy of the payment history on the BVC contract until February 15, 2011. Invoices seemed to have been approved with minimal scrutiny and this finding is based only on the payment history. When an adjustment is made to an invoice, the AP unit staff mark the payment history with a © symbol. By August 11, 2009, the Board had approved amendments 1 and 2 in the amounts of $900,000 and $996,527 respectively for a total contract amount of $4,674,487. Of the invoices processed until Aug 11, 2009, the District paid BVC a total of $1,363,435.80 and only two of the thirty three invoices had corrections, i.e., the © symbol. The April 4, 2007 invoice had a correction of $179.50 because BVC did not include a detailed receipt for a dinner expense and the August 13, 2007 invoice had a correction of $147.80 because the expense for a foam board for a water re-use poster was rejected by the District. All other expenses were approved and paid to BVC.

The invoices and the supporting documents show that the review and approval lacked a comparative analysis of the hours, costs, and the deliverables received. For example, it was not evident that District staff reviewed the invoices to determine whether the deliverables could have been accomplished with a lower number of labor hours and associated costs. The documents demonstrate that the labor hours billed by BVC were not questioned and accepted as appropriate for the work that was accomplished. The inadequate scrutiny demonstrates that might not know how tasks, deliverables, and costs must be analyzed.

Other examples pertain to retention amounts, managing project budgets, and substantive task hours and budget were used to pay for non-substantive task expenses, i.e., computer costs.

Retention Amounts

For example, the first couple of invoices (#1009942 and 1011869) were approved for payment and paid even though the 10% retention amount was included in the invoices. The error favored the District in these two instances and the consultant was paid less than what was owed. However, the project manager should have noted the retention, approved the appropriate amount for payment, and the Accounts Payable (AP) unit in the Finance division paid the approved amount. The AP accountant is only authorized to pay the amount that was approved (the project manager approved the entire amount before the retention and there were no changes or notes on the invoices by the project manager). Such discrepancies occur when the separation of duties are not clearly defined, especially at project task level.

The discrepancies in the two invoices were fixed after the second invoice and the District paid BVC the amounts owed. Beginning with the third invoice in February 2007, the project manager noted on the invoice that the amount included the retention amount.

Managing budgets

With the fifth invoice dated March 5, 2007 BVC started submitting a Budget Status Table which identified the various tasks and the contract amounts per task, invoice amounts to-date, and project budget remaining per task. These documents, submitted after four invoices, demonstrate that there was no structured approach to managing the project budget and the consultant's invoices and payments. They also demonstrate that the BVC took the initiative to prepare and submit the document while it should have been the responsibility of the District project manager to prepare, monitor, reconcile, and control such information.

Substantive task hours and costs for non-substantive expenses

In BVC's Fee Estimate document (Appendix 5) each task had hours and costs associated with it. There were no separate hours or costs for computer usage. When the labor hours of a project manager, or associate engineer, or administrative support are used for computer usage hours, the task hours, for example for preliminary design, are reduced because a portion of those task hours were used for computer usage.

Most of the invoices included costs for computer usage (approx. $6.20 per hour of each professional labor hour), postage, telephone, and vehicle mileage expenses. These costs were not identified in the Fee Estimate document (Appendix 5) attached to the Scope of Services. The only two non labor costs in the Fee Estimate were for Travel (Hotel, air, meals, etc.) and Reproduction (Outside reprographics). On the invoices, these costs were billed under each task – project management, refine project description, preliminary design, etc. For example, under Task 1 Project Management, 1,300 hours are for BVC professional labor hours for a total cost of $211,700; Travel was estimated to cost $4,000; Reproduction $1,100; and Sub-consultants were estimated to cost $17,500 excluding a 5% mark up ($875) for BVC. The total cost for Task 1 was $235,175. Similarly, under Task 2.2 Preliminary Design Report, Travel was estimated at $15,000, Reproduction at $20,000, sub-consultants at $97,250, and BVC labor at $219,500.

A review of the first 10 invoices showed that $3,050.40 and $12,679 for Task 1 and 2.2 respectively were billed and paid for computer costs. The District paid $15,729.40 from the funds budgeted for BVC labor, therefore receiving less value/return on the District's costs, because these costs were not identified in the proposed fee estimates and the invoices were not appropriately scrutinized. If one considered just the total amount of $711,524.77 paid until the tenth invoice, then $15,729 or 2.21% of the costs were for computer usage. Based on BVC's computer cost accounting system's rate of $6.20 per professional labor hour and the total proposed BVC labor hours (only under the original contract) of 11,484 hours (professional labor cost was estimated at $1,679,320), the total computer costs would have amounted to $71,200 or approximately 4.23%. Such an approach was not beneficial to the District because the project's substantive task hours and budget were used to pay for non-substantive task expenses.

Finding 5. Lack of project management, contract administration, and control.

In "Finding 3. Project management documents not prepared or used on the project," this review found that project management documents, often used to establish the project management framework, components, terminology, definitions, processes, sequencing, and other elements of a project, are not being prepared and used by staff. Another purpose for the documents is to establish the foundation and path for administering, management, and control of a project. The documents help apply methodologies and practices to projects.

If the commonly used documents mentioned under Finding 3 are not prepared or used, the project and/or contract might not be appropriately monitored, administered, controlled, or managed.

For example, the first task under BVC's Scope of Services, Project Management, states that it is for "project management of the consultant team activities and interaction with District staff." BVC's statement clarified that the project management costs were only for BVC's effort and labor, not for District staff's project management effort or labor. Such statements are good practice for a consultant, but BVC's documents were missing the request and confirmation of District staff's project management roles, responsibilities, and commitment. Such information was also not evident in the District's documents. District project managers and others were responsible for managing BVC's contract and the ARWTP project, but there was little evidence that the contract or the project was actively managed until July 28, 2009. The lack of project documents demonstrate that there might have been an assumption that since project management was one of the tasks/responsibilities of BVC, District staff need not be actively involved.

Some elements of the Scope of Services (Appendix 5) under the initial contract and those under the various amendments were premature and later not credited to the District and the terminology used to describe the various tasks were duplicative and caused confusion.

Task 5 Construction Services, is described as the "consultant shall work directly with the District Construction Administrator during the construction phase of the project on an as-requested basis." However, Task 5.1 Bid and Award Services and Task 5.4 Final As-built drawings have little to do with work "during the construction phase." District staff should have requested a clarification of the statement and the listed tasks prior to award. Moreover, the tasks seemed to be missing, except for Task 5.3 Interpret Plans and Specifications, the actual work that is normally carried out during the construction phase like confirmation and verification of construction drawings and specifications to actual construction, change order decisions/approval, quality assurance/control issues, field testing confirmations/certifications, and others. However, given that at the time the project was undefined, had no project description, and was not scoped adequately, it was premature to include Construction Services as a task in the Scope of Services.

Similarly, Task 6 Training Services including O&M (Operations and Maintenance) Manuals also seemed premature to be included in the Scope of Services. The project designs had not been frozen/finalized (i.e., not at 90% design stage) for the District or BVC to know the scope of operations and maintenance requirements. Additionally, training services would have been premature if the District lacked all the necessary project management documents, had not included operations and maintenance staff or managers in the initiation or planning phases of the project, and had no skill inventory or expertise analysis.

Construction drawings and specifications can be prepared very meticulously and contain great amounts of detail. There are legitimate reasons for costs associated with their interpretation because drawings and specifications are like any spoken or written language, subject to different understanding and opinions. The need for interpretation is minimized when the documents follow industry standards like those of the AIA (American Institute of Architects), ASCE (American Society of Civil Engineers), ANSI (American National Standards Institute), CSI (Construction Specifications Institute) and others, and contain very clear, specific, and detailed information. For tasks like Task 5.3 Interpret Plans and Specifications in the original contract and Task 9.1-9.6 for Engineering Review in Amendment 3 very few consultants absorb these costs; most add the tasks to the Scope of Services to recover costs. The different situations that require the consultant to review are RFIs (Requests for Information) and Change Orders (Potential (PCO) and Construction (CCO)). Both these situations can lead to changes in the Construction Contract Documents (CCD) that need to be completed by the consultant. RFIs come from contractors and sometimes from permitting agencies are often for clarification or additional information. Whereas, PCOs or CCOs often occur during the construction period and could be a result of unforeseen situations, new information, additional Scope of Work, inconsistencies or discrepancies, or non-conforming construction. PCOs and CCOs often require the consultant to review and evaluate the documents, make the necessary changes to the CCDs, include cost analysis and estimates, prepare impact reports (e.g., additional CEQA/NEPA review or permits), and if there are disputes between the client and the contractor, sometimes the consultant assists in the resolution of the disputes. Some projects use an independent Dispute Resolution Board/Team to resolve disputes and in those situations, the consultant acts on behalf of the client.

The cost proposals can be based solely on a running total for labor hours or X number of hours per submittal. BVC used the latter approach and its assumptions were as follows for Task 9.1-9.6 in Amendment 3:

1. The submittal review subtask is based on the Consultant reviewing 400 original submittals at an average of 6 hours per submittal for general equipment items for a total of 2,400 hours.

2. Review of multi-discipline submittals: 50 submittals at an average of 20 hours per submittal for a total of 1,000 hours.

3. Re-submittal review: 150 re-submittals at an average of 4 hours per submittal for a total of 600 hours.

4. The RFI review subtask is based on the Consultant reviewing 500 RFIs at an average review time of 5 hours each for a total of 2,500 hours.
5. The construction change order assistance subtask is based on the Consultant providing support for 125 change items at an average support time of 4 hours for each item for a total of 500 hours.

6. Maintaining and updating record drawings: 300 drawings at an average of 2 hours per drawing for a total of 600 hours.

7. Review and comment on initial/baseline schedule and meeting with Contractor for a total of 40 hours.

8. Monthly schedule updates review: 20 schedule updates at an average of 18 hours per update for a total of 360 hours.

9. Engineering support for dispute resolution for a total of 170 hours, except for disputes related to allegations of design errors and omissions, in which case District will not compensate Consultant.

10. Submittal, RFI, and PCO logs are prepared by the District and distributed weekly or as often as needed.

Each situation that causes a submittal for RFIs or COs can be different and require different amounts of work. For complex and/or unique projects, it is more difficult to predict the exact amount of hours and the associated work. So, consultant costs for interpretation of plans and specifications or engineering review are often an approximation and are negotiated. An experienced project manager who has cost estimating experience is required to understand and make an informed decision about the costs and negotiate them appropriately. An informed decision about negotiating costs with the consultant would require a study of the entire set of the specifications and drawings, the capabilities of the District staff, contractor staff, and BVC staff to prepare, read, understand, and interpret the documents, and compare them to analyze the gaps in understanding or decision-making. Additionally, if the engineering and project management capabilities are robust, the interpretation and engineering reviews could be done by the District, but would require an analysis of skill and subject matter expertise to determine if the District labor costs would be less. For the BVC contract, this review could not determine for certain whether those costs were appropriate or excessive because it was beyond the scope of this review.

In the BVC contract's Scope of Services (Appendix 5), Task 5 Construction Services and Task 6 Training were not completed within the scope of the original contract because there were too many changing circumstances and the project was not adequately defined or the designs were not finalized. According to the staff presentation at the Board hearing on October 26, 2010, staff acknowledged that the costs associated with those tasks were used for other unanticipated work that was not in the original contract. The documents presented for this review did not provide any evidence or documentation of the unanticipated work or amounts credited to the District for the work not completed under the contract. Any change in the Scope of Services is normally addressed through a Change Order or through amendments to the contract. Moreover, schedule, cost impacts, and risks as a result of the change need to be considered and authorized prior to implementation of the changes. Incomplete tasks must be credited back to the District through amendments and staff should exercise appropriate project control so that tasks are not commingled or credits are not used for paying for tasks out of scope.

In the Scope of Services (Appendix 7) for Amendment 1 the cost estimate for Task 5 Construction Services increased by $44,330 without any change to the scope or task elements. The increase did not seem justified particularly when tasks like Bid and Award Services, Submittal Review, Interpret Plans and Specifications, and Final As-built drawings have little bearing on increased size or alternate location of a project.

See further analysis and discussion on Amendment 2 and 3 in the section "After July 28, 2009."

Active project management, contract administration, and project control are possible when there is a holistic and comprehensive approach to initiating and implementing projects. The entire organization must act as a project/program management organization.

After July 28, 2009 until February 2011

Around July 28, 2009, the ARWTP project transited from the Water Utility Planning (WUP) unit in the Water Supply Division to the Treated Water Project Delivery (TWPD) unit in the Capital Services Division. On the same day, BVC was issued a Notice to Proceed with Task 3, Project Design. On August 25, 2009, the Board adopted Resolution 09-69 specifying its intent to consider undertaking the improvement work of the ARWTP project.

Finding 1. Changing circumstances, ARRA funding requirements and deadlines, and other factors led to increased Scope of Services of the BVC contract.

ARRA funding necessitate CEQA/NEPA be adopted by February 2010 and the construction contract be awarded by September 30, 2010. On October 27, 2009, due to National Environmental Policy Act requirements as a result of ARRA funding, water quality findings from the SJ/SC WPCP and the resulting compliance with the City's National Pollutant Discharge Elimination System (NPDES) permit, design requirements to surcharge the site for at least three to four months before construction, and other factors, including an alternate site location east of the Transmission Pump Station (TPS), District staff requested the Board to authorize the CEO to amend the BVC agreement No. A3064A in the amount of $1.2 million. The Board approved Amendment No. 2 on October 27, 2009.

On October 26, 2010 District staff requested the Board to authorize the CEO to amend the BVC agreement No. A3064A in the amount of $2,661,094 to allow BVC to provide engineering services to support the construction of the project. The Board approved Amendment No. 3 in the amount of $2,417,194: authorized the CEO to spend up to $244,000 for supplementary services, and required that the CEO report back to the Board for expenditures over $50,000.

As the circumstances changed, the requirements of the project changed, and therefore the BVC contract's scope and project costs increased. The explanation outlined in Section D. Contract Administration and Project Management, "Until around July 28, 2009" applies here. Well documented, managed, informed, communicated, and controlled projects help manage changing circumstances and increased costs because they have the least number of uncontrollable factors.

Finding 2. Minimal or inadequate project and program management documents.

A review of the District's P Drive folder 91184008_ATF demonstrated that the electronic file management system had minimal project management documents. Under this folder are sub folders for project management, planning phase, design phase, construction phase, and other purposes. Many of these folders were either empty or had documents that belonged elsewhere. The folders also contained documents that were minimally updated but were under the same heading/title. For example, a document titled "Project Plan" and dated August 2009 had mostly the same content but was later dated January 8, 2010, except for the Constraints and Assumptions section. The Constraints section mentioned the ARRA funding and that the project construction cost needed to be encumbered on or before September 30, 2010. The Assumptions section stated that the facility will be designed to be a standalone facility compatible with City's design standards and controllable from the WPCP. It added that two construction contracts will be necessary - Phase 1 for early earthwork and Phase to for facility construction. The January 2010 Project Plan included the overall cost of the project ($53 million) and some date changes to the project schedule.

Another document, titled Baseline Project Plan dated February 16, 2011, probably another version of the previous two Project Plan documents with the only change being the cost of the project, $63 million. Many other aspects of a typical Project Plan like roles and responsibilities, communication plan, assumptions, risk plan, and the like were missing. Moreover, the project plans seemed to have been prepared for one-time use as opposed to a document that is a continual "living" document with many versions. This review did not find any other project plans or versions of these documents.

However, a Construction Work Plan (CWP) dated November 4, 2010 and a Program Management Plan (PMP) dated January 5, 2011 were available. The CWP had more substantive content than the project plans and contained communication plans, roles and responsibilities, Mitigation Monitoring Reporting Program checklist, and flow charts for RFIs (Requests for Information), Change Orders, and Submittal reviews. The CWP was much improved but lacked the depth and layers of information that would is necessary to manage complex projects. CWPs are often prepared before bidding of construction contracts and many elements/information from the CWP are useful for inclusion in the bid package. The construction contract was awarded on September 28, 2010 and the project broke ground on November 3, 2010, a day before the CWP was prepared.

The Program Management Plan of January 5, 2011 also demonstrates a similar lack of depth like the

CWP. The PMP seemed like a mixture of a project management plan with communication and process arrangements with the City of San Jose along with the same flow charts that were in the CWP for RFIs (Requests for Information), Change Orders, and Submittal reviews. The PMP should have been prepared in 2004 before or in conjunction with the ARWTP Feasibility Study Report and included all phases of the ARWTP project. A PMP normally begins with a mission, vision, and strategies to achieve the objectives of the program (in this case the ARWTP program) and it outlines how they relate to the overall mission of the District and other system-wide plans. The PMP then lays out the management structure – the organization, functions, systems, processes, activities. They provide the basis for the various components, beginning in this case with stakeholder/collaborative efforts, inter-governmental agreements, and the framework for specific ARWTP projects. This project then becomes one sub-component and all its parts from feasibility to initiation, to planning, to design, construction, testing, operations, and maintenance are included as one whole.

This review could not find, in the P Drive, internal meeting agenda, notes, minutes, action items, and other communication documents that convey the thinking behind the decisions of a project. There were copies of some emails in some subfolders but they were only for topics that were deemed important or critical to a particular juncture on the project and not a continuous set of communiqué for the project. There was also little evidence of consistent use of project management tools or methods to manage the project. Very few of the following common project management documents/tools were used on the project: Project charter, SWOT Analysis, Scope Statement, Work Breakdown Structure (WBS), Project Network Diagram, Gantt Chart, Milestone Chart, Time-scaled Arrow Diagram, CPM (Critical Path Mean) Diagram, Critical Chain Schedule, Hierarchical Schedule, Line of Balance, RAM (Responsibility Assignment Matrix) or RACI (Responsible, Accountable, Consulted, and Informed) Matrix or LRC (Linear Responsibility Chart), Cost Planning Map, Cost Baseline document, Estimate (Analogous/Parametric /Bottom-up) documents, Project Quality information (Flowcharts and Affinity diagrams), Risk Planning tools (Response Plan, Monte Carlo analysis, Decision Tree), Stakeholder Matrix, Skill Inventory and Expertise Analysis, and other documents. The Project plans, CWP, PMP, project schedule, and other documents on the P Drive were based on the ISO procedures and instructions, but were not adequately or continually used on the ARWTP project.

Finding 3. Possible cursory oversight of project invoices.

Invoices and supporting documents after invoice dated May 14, 2009 were not submitted for this review. Therefore the review is limited to the payment history document (Appendix 6), received from the Accounts Payable (AP) unit of the Finance division. It lists the various invoice dates, amounts billed, retained, and paid, and the check dates. From May 14, 2009 until invoice dated August 4, 2010, the District paid BVC nine invoices for a total of $2,144,343.20 with no invoice being corrected or revised (no © symbol). This signifies that either there were no discrepancies or errors in BVC's billing costs, hours, and deliverables or the invoices were not appropriately scrutinized by the project manager.

From the October 27, 2010 invoice date onwards the District stopped retention amounts. The District could benefit by revising this practice and continue to hold retention amounts as appropriate until completion of the contract so that District interests are protected in the event of non-performance of a consultant.

Appendix 7 is a copy of an email exchange between BVC and District staff in March 2011. This is the only evidence that was found on the P Drive folder 91184008_ATF that demonstrated a review of the invoices (January 2011). Majority of the District's revisions pertained to asking BVC to revise the invoices and associated charges to appropriate task numbers. Other revisions were for document submittal, breakdown of outstanding items, and BVC tracking of efforts related to design errors. BVC was asked to "... indicate on [its] invoice if there were any [errors] in this billing period." It is unclear why BVC needed to be encouraged to track its own errors and why the District staff might not scrutinize the invoices and look for errors. Errors and omissions are the consultant's responsibility, however, if there are impacts to the District or the public as a result of a consultant's errors and omissions, the consultant must be held responsible. This review could not determine the purpose of that statement.

In Appendix 7, BVC asked the District, "Please let me know if you require changes, or if it is okay to send to Guy" in the Accounts Payable (AP) unit. One could also infer that BVC was either asking whether approval or authorization by the District's Project Manager was necessary for payment or was trying to expedite payment. According to District staff, per contract terms, vendors are required to send invoices directly to the AP unit so that the invoices are date stamped as received by the District. This is a good practice to centralize the processing of invoices for tracking, monitoring, and prompt payment to vendors. The AP unit staff send the invoices to the District's Project Manager for approval prior to processing them for payment.

Finding 4. Minimal project management, contract administration, and control of the project.

As noted in "Finding 2. Minimal or inadequate project and program management documents," a review of the District's P Drive folder 91184008_ATF demonstrated that the electronic file management system had minimal project management documents. This review found that project management documents used to establish the project management framework, components, terminology, definitions, processes, sequencing, and other elements of a project are not being prepared and used by staff. Another purpose for the documents is to establish the foundation and path for administering, management, and control of a project. The documents/tools help apply methodologies and practices to projects; analyze and monitor the status of schedules, tasks, budgets, and deliverables; anticipate scope changes and unforeseen circumstances; evaluate District and vendor performance while the project is being implemented; establish skills, resource, and project inventory, performance metrics, and standards; enable portfolio analysis and create benchmarks for future projects; and go beyond meeting District ends/objectives.

If the commonly used documents mentioned under Finding 2 in the section "Until around July 28, 2009" are not prepared or used, it seems like the project and contract are not being appropriately administered, controlled, or managed. The following examples support the finding.

Tasks

On October 26, 2010 District staff requested the Board to authorize the CEO to amend the BVC agreement No. A3064A in the amount of $2,661,094 to allow BVC to provide engineering services to support the construction of the project. The Board approved Amendment No. 3 in the amount of $2,417,194: authorized the CEO to spend up to $244,000 for supplementary services, and required that the CEO report back to the Board for expenditures over $50,000.

The original contract had $46,220 allocated for training services and Amendment 3 included an additional $174,048. A review of the Scope of Services of both the original contract and Amendment 3 shows additional work proposed in the latter document, however, there is minimal information except for labor hours to justify a four-fold increase to the cost. There is also no information on whether the $46,220 would be credited to the District or if those tasks will be carried out.

Similarly, in Task 7 – Early Earthwork and Construction Support, in the Scope of Services (Appendix 8) of Amendment 2, there seemed to be duplicated tasks by BVC, especially when District staff were/are responsible for construction management. Also in subtasks under Task 7 of Amendment 2 and Task 9 - Engineering Review (during construction) of Amendment 3 there seemed to be duplicated/overlapping tasks – Submittal review, RFIs, and Change Order assistance. Both Scope of Services documents did not distinguish between the same task for Early Earthwork and during construction or why they required additional costs. Task 7 of Amendment 2 added $113,150 to the project and Task 9 of Amendment 3 added $1,305,066 to the project. There was no evidence that the similarities of these tasks and their associated costs were questioned.

Supplementary services are used as a tool to address changes to the project and it enables the project managers to make decisions very quickly. However, Supplementary services provide opportunities for exceeding the budget, scope, and schedule, especially when tasks are duplicated between amendments, or when the District is completely reliant on the consultant for project management, administration, and control. The costs associated with Supplementary services in Amendments 2 and 3 were $90,600 and $244,000 respectively.

Transition

Amongst the documents on the P Drive folder 91184008_ATF was a QMS Waiver Request F42201 document titled, "Design Phase WBS Item Description and Instructions." The request was to waive the preparation of a separate document for the transition from Design to Construction of the ARWTP project because "the Construction Work Plan dated October 29, 2010 contained all the key project information." This waiver request represents another example of the gap in understanding of project management or contract administration and the associated tools. Transition of a project from one team to another team, is sometimes necessary due to the unavailability of staff, expertise differences, etc. However, if transitioning of projects from one team to another is a standard practice, the transition document contains a lot more information than the Construction Work Plan and is one of the most important documents. In addition to a synopsis of the entire project until that point and location of all the documents and other information during the design phase, the transition document is supposed to contain contract information with respect to budgets, tasks, deliverables, etc. The document also contains information about lessons learned and advance notice of issues for the construction team to consider during the construction phase of the project. When the transition occurs in the middle of a contract, like the BVC contract, the handoffs from one team to another has to be very clear and specific. Normally, the teams begin meeting months in advance and work with each other by overlapping responsibilities and marking off check lists of issues, updating all the project management documents, and preparing the transition document as the final confirmation of the handing off of the project from one team to another. The transition document is also a document that is about responsibility and accountability. Along with all the documentation and other information until the point of the transition, the document provides the design team a basis for conveying to the construction management team what occurred during the design phase. That prevents the construction management team from making decisions without the background information and being accountable for its own decisions. Without a transition document one team could blame the other team for missteps.

Reference and Comparisons

District staff requested and received Board approval of Amendments 1, 2, and 3 to the BVC contract in October 2007, 2009, and 2010 respectively. On page 4 of the Board Agenda memo (Appendix 9) for the meeting date of October 27, 2009, i.e., for approval of Amendment 2, staff stated that "... the design ... fees would be approximately $2.4 million or 5.6% of the estimated project construction cost of $43 million. This design fee is in line with the average of consultant fee of 6.5% of construction cost of design services ... based on the ASCE Manuals and Reports on Engineering Practice No. 45." A similar statement with the similar numbers (except 6.5% was changed to 6%) was included in the Board Agenda memo for the meeting date of October 29, 2010. The 2010 memo also included comparisons of costs and percentages of the ARWTP project with other District projects: Lenihan Dam Outlet, WTIP2 at STWTP and PWTIP, and Almaden Water Quality Lab.

The concerns here are two-fold. One, the ASCE Manuals and Reports on Engineering Practice No. 45 might not be an appropriate source for cost data. It is a manual or report, as the introduction page states, "… not in any sense a 'standard,' … nor is it so elementary or so conclusive as to provide a "rule of thumb" for non-engineers." The manual/report was adopted in 1964 as "A Guide for the Engagement of Engineering Services" and revised editions were issued until 2002 when it was renamed to "How to work effectively with consulting engineers – Getting the best project at the right price." It was compiled as a result of the work obtained using a survey questionnaire sent in early 2000 to over 300 consulting engineering firms. Per industry practices, fees are often stable over a certain period, but 2000 cost information should not be used as a basis for decisions in 2009 and 10. Moreover, the manual/report does not consider other factors like Bay Area differential, seasonal cost adjustments, economic conditions, and specialty construction. Graph 1 on page 43 distinguishes between very complex and those of average complexity. But it does not elaborate on the complexity or provide any further levels of complexity to identify complex design projects with very complex functions and processes.

Second, comparisons of water treatment facilities are appropriate, however the Lenihan Dam Outlet, and Water Quality Lab projects are not comparable projects to the ARWTP project. If staff considered only water treatment facilities, the next level of comparisons also need to be considered like size, TDS, technologies, changing circumstances, inadequate Scope of Services and project management, and other factors. These examples demonstrate that comparative analysis of projects requires consideration of the complexity of projects, appropriate references, and similar scope/function.

BOARD MEMBERS' QUESTIONS

At the various Board meetings when the BVC contract was presented, Board members raised issues about contract administration and project management that led to this review. Below is an attempt to paraphrase those issues and/or questions with explanations and recommendations based on the findings in this review pertaining to the BVC contract.

1. **The budgets start with small contracts and then they expand at later stages. Why do we keep amending contracts?**

   Amendments are not necessarily bad or good tools, they are useful to address a project's changing circumstances. Very precisely defined and controlled projects could be implemented on budget and within the schedule but they are also impacted by unforeseen circumstances. So, amendments are necessary tools for projects and are often used for augmented costs and increased timelines. But amendments are also used to credit the client for services not performed within the period of the original contract.

   The ARWTP project began with an inadequate Scope of Services/Work. When the Scope of Services is ambiguous and broad, a consultant is unable to respond very specifically and provide a precise roadmap or cost for the services. The District would also be unable to evaluate responses if they are not precise and do not respond to the District's requirements and conditions. That puts the District at a disadvantage to control and manage the project. Moreover, BVC was responsible for monitoring the budgets and the schedule per their Scope of Services, which provided opportunities for conflict of interest. Additionally, there were changing circumstances beginning with increased size, site location, ARRA funding, and others that resulted in changing the Scope of Services. If staff were fully in control of the management and administration of the BVC contract, responding to changing circumstances could have been easier and mitigated with less impact to project costs or schedule. Amendments were necessary to address the above conditions and circumstances.

2. **Engineering services should be competitively bid separately and not be included in the Scope of Services of a design consultant.**

   There are two approaches to this issue. One, if the organization has a very robust Project Management Program (PMP) then the project could be scoped and defined very precisely. In such organizations, the projects are also managed very tightly and the PMP or the Project team has full control and authority of the project. Only in such circumstances and when the projects can be defined, scoped, scheduled, managed, and controlled precisely, it might be beneficial to have the design and engineering services be performed by one company/consultant. The benefits often include lower costs, reliable schedules and overall project costs, avoid learning curve costs and time with different consultants/contractors, and incompatible consultants. Additionally, such scenarios also make one company responsible for all aspects of the project.

   Whereas, when there is a lack of staff and minimal project management standards, documents, methodologies, and when the scope, schedule, control, and management of the projects are ill defined, the District could have benefitted from contracting the two services separately.

Note: Government Code Section 4526 requires selection for professional services must be based on demonstrated competence and professional qualifications.

3. **The Black and Veatch contract was for planning, design, engineering, and construction support. Aren't there issues of conflict of interest and lack of competition by having the same consultant perform all those services?**

In bidding and awarding contracts, including developing the Scope of Services, public organizations must comply with the Public Contract Code. The Legislature, in enacting the Public Contract Code, wanted to achieve certain objectives. Some of those objectives, as listed in Section 100 of the code, include elimination of favoritism, clarification of the law regarding competitive bidding requirements, fair opportunity to bid, and stimulating competition.

In the selection of the consultant for the ARWTP project, the District competitively bid the project and selected BVC after reviewing the proposals from BVC and CDM. Oral interviews were held and the panel for both the proposal review and the oral interviews comprised of three staff from the District, and one each from the City of San Jose, San Benito County Water District, and the City of Santa Clara. Therefore, as far as the bidding and selection process, the District met the requirements of the Public Contract Code.

However, as noted in the findings, the inadequate scope of work/services resulted in responses that were subject to change and interpretation and the questions for the interviews did not adequately address the issues related to the project.

Competition
If one applies the law very strictly, the planning, design, engineering, and construction phases of a project must be bid as separate phases. For example, if the District hired ABC company to plan a project, that company would be at a competitive advantage over other companies in bidding for the design phase because it has more knowledge of the project. To enable fair competition, some public organizations preclude the ABC company to participate in the subsequent phases. Others organizations might not be as strict, but establish very clear parameters, including making all information that was used during the planning phase available to bidders as part of the RFP for the design phase. There are also organizations that purposely combine phases and bid them as a whole – design and build projects – which might work on public works construction for office, housing, and other types.

Whereas, advanced recycled water treatment projects are not very common and the expertise available is limited, both in terms of consulting services and construction. Additionally, membrane filtration, which is proprietary, needed to be procured and required significant input during the planning, design, and subsequent phases. However, other water and sanitation districts have implemented such projects and the District consulted them after the award of the BVC contract, as opposed to prior to the award[8]. Prior consultation would have enabled District staff to understand the various intricacies and provided more knowledge in making decisions.

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[8] There was no evidence in the submitted documentation that the District communicated with other water and sanitation districts regarding the Scope of Services required for the BVC contract prior to the award.

As noted in the explanation for question #2, the District's lack of robust project management capabilities on this project and the inadequate scope of services were very important factors in the separation of phases. If those factors were addressed, the ARWTP project's consulting services project could have avoided the perception of conflict of interest.

Conflict of interest

As noted in the section above "Competition," when a company has knowledge of the initial phase of the project, for example the planning phase, the company has a competitive advantage. In addition to such advantage, the company could also have an interest in how the subsequent phases of the project are developed, especially when the Scope of Services are ill-defined and the public organization lacks sufficient project management expertise on this project.

The analysis and findings from this review confirm that the BVC contract provided ample opportunity for BVC to shape the subsequent phases. The Scope of Services developed by BVC for the original contract and the subsequent amendments show that there was confusion, duplication, and overlap of tasks. The analysis and findings confirm that there was a conflict, (i.e., appearance of conflict). There were also numerous changing circumstances (sizing, location, ARRA funding deadlines, toxicity levels, etc.) and factors like lack of staff knowledge and expertise that could have enabled the conflict of interest. The incomplete District documents, project management, control, and oversight makes it difficult for this review to state for certain whether BVC's actions created an actual conflict.

4. **Construction services and training services were included in the original contract and later through amendments more monies were requested for the same services.**

The Scope of Services in the original BVC contract included contingent tasks for both construction and training services. The costs for those tasks were $181,310 and $46,220 ,respectively. Construction services tasks included tasks Bid and Award Services and Final As-built drawings which are before and after construction services respectively. In addition to these services not belonging in the construction phase, they were also premature in the original contract. The project was not fully scoped when it was initiated in May 2006 and only in August 2009 the Board adopted Resolution 09-69 specifying its intent to consider undertaking the improvement work of the ARWTP project. Until then it was not necessary for the District to incur the costs associated with those services.

However, in Amendment 1, the cost for construction services increased by $44,330 without any change to the scope or task elements. The increase did not seem justified particularly when tasks like Bid and Award Services, Interpret Plans and Specifications, and Final As-built drawings have little bearing on increased size or alternate location of a project.

There was no change to the costs for those services in Amendment 2 however, Task 7 Early Earthwork Design and Construction support also included similar sub tasks and associated costs.

The summary of tasks and budget in the Board Agenda memo for Amendment 3 showed two categories of services and budget amounts: Construction Engineering Support Services and

Operations-related services with budget amounts of $2,360,486 and $300,608. The scope of the task and the cost (an additional $174,048) for Training services (under the category of Operations-related services) increased. Construction services were included under a new task titled, Engineering Review (under the category of Construction Engineering Support services), and the scope of the tasks and the cost also increased. Task 9 Engineering Review was $1,305,066.

In addition to confusion of terms or usage of same terms to describe different services or different combinations of words to describe the same services, there was no clear delineation of the differences of tasks or services and there was no justification of why the costs for tasks in the Scope of Services in the original contract were not credited when the same tasks were being added to Amendments. The Board Agenda memos and the Scope of Services provide little documentation or justification for the additional costs for the same services, except that the scope increased due to various factors. There were no cost estimates or variance analysis or deliverable to cost analysis, and project control documents. The memo contained comparison of construction costs and engineering support fees for various projects, some of which did not belong in the comparison because they were not advanced recycled water treatment projects.

According to the staff presentation at the Board hearing on October 26, 2010, staff acknowledged that the costs associated with those tasks were used for other unanticipated work. The documents presented for this review did not provide any evidence or documentation of the unanticipated work and dollar amounts credited to the District for the work not completed under the contract. Any change in the Scope of Services is normally addressed through a Change Order or through amendments to the contract. Moreover, schedule, cost impacts, and risks as a result of the change need to be considered and authorized prior to implementation of the changes. Costs for incomplete tasks must be credited back to the District through amendments and appropriate project control is necessary so that tasks are not commingled or credits are not used for paying for tasks out of scope.

5. Why do we have two sets of Supplemental Services?

Amendment 2 and Amendment 3 included Supplemental Services for $90,600 and $244,000 respectively. Supplemental Services in Amendment 2 were for additional services like: project management, preliminary design, project design, and earthwork design and construction support. In Amendment 3, Supplemental Services were for additional services like: project management, engineering review, engineering site support, training, system testing and start-up, operational support, partnering workshops, and other unanticipated services. Supplemental Services or Additional Services are used on public works construction contracts based on the context of each project. They are often used to address unique or unusual services necessary to accomplish projects. The category called "Unanticipated Services" are used in public works construction because the calendar to schedule public meetings and receive approvals would not be conducive to decision-making on construction sites. The construction schedule would be severely impacted and the organization could lose a lot more money than allocated for the project. Unanticipated Services are used to enable project managers to make decisions and implement changes very quickly. They are necessary to expedite decisions and implement them.

However, Supplementary/Additional/Unanticipated services are often used to perform services that haven't been planned in advance, especially when used in phases other than the construction phase. The Supplemental Services in Amendments 2 and 3 seem like additional services for all the tasks in the amendments. BVC or the District might not have finalized the various aspects of those tasks and were anticipating changes. Using Supplemental Services in the design and pre-construction phases signifies poor planning, scheduling, and lack of project control. When a project is scheduled precisely and controlled appropriately by the client, the tasks are implemented precisely based on the schedule and costs. Therefore, to meet the schedule, project participants of both the client and the consultant have to identify all the tasks, deliverables, costs, and duration (a subcomponent of the schedule) well in advance and adhere to them.

6. **The construction phase of the ARWTP project will require $5.8 million (13.7% of total construction cost) in District staff costs for construction management, project management, and support. These costs are excessive and is there any value for the public?**

At the October 26, 2010 Board meeting staff presented an overhead slide showing staff costs of $5.8 million for the construction phase of the project. They included approximately 6.1 FTEs (Full Time Equivalent) for construction management, inspection, and administrative support functions for labor cost of $2,537,600 and $400,000 in non-labor costs for specialty inspection services like mechanical, electrical, welding, coating, control, instrumentation, etc. The non-construction management and inspection costs were $2,858,400, for project management, contract administration, City of San Jose and other inter-agency matters, grant administration, construction drawings and as-built surveys, engineering services as owner representative, CAD drafting, environmental-biological-archaeological consultation, and environmental compliance. The labor costs for non-construction management and inspection were $2,558,400 for approximately 6.15 FTEs and non-labor costs were $300,000.

At the same meeting staff presented costs for these services on other District and Bay Area water-related projects that varied between 3% and 15.6%. Evaluation and analysis of costs requires comparisons of projects that are similar in scope, complexity, and resources. Such an analysis requires extensive documentation on the projects and a very clear understanding of the circumstances that existed during each phase of the projects. Such information is compiled and analyzed controlling for cost differentials, geographical location, economic conditions, weather conditions, availability of labor and materials, and other factors. It is beyond the scope of this review given the time limits to evaluate whether the District staff costs are excessive or whether there is value to the public.

The one observation that this review can make, based on the review of the BVC contract, is that the District and the public would benefit from robust and proactive project and portfolio management functions. They are essential for cost controls and operational efficiencies in managing projects or contracts, whether they are consultant contracts or construction contracts and projects.

In terms of value to the public, an approximate rule of thumb is that for every $1 million spent in public works construction projects, approximately 7-10 jobs are created. The $5 million spent on labor costs for district staff resources use approximately 12.25 FTEs and those jobs remain in the county. However, the comparison is not accurate because the rule of thumb is for construction labor on the site, and district staff labor is for professional services which might have a higher cost to lower job ratio. The review was unable to find professional services comparisons for advanced recycled water planning, design, and engineering.

7. "Do not box the Board" into making decisions.

This statement, by a Board Member at the October 29, 2010 Board meeting regarding the BVC Amendment 3, is in reference to bringing items to the Board for decisions when the Board has little option but to approve the project. Such approval could occur with minimal opportunities for additional public discussion, input, or additional research and information by staff.

There are circumstances throughout the course of a project for decisions to be made quickly and those decisions are often delegated to the CEO so that projects can progress according to their schedule and costs. There are also circumstances caused by external factors that can require quick decision-making. In the ARWTP project, ARRA funds were sought and received. The funds came with the requirement that the construction begin by September 30, 2010 and most of the infrastructure be installed by September 30, 2011. The ARWTP project needed to break ground on November 3, 2010 to meet the later deadline. Therefore, on October 26, 2010 staff had requested approval of Amendment 3 to the BVC contract which added numerous engineering support services during the construction phase. After much discussion the Board decided to continue the item to October 29, 2010 so that staff had the opportunity to provide more information to enable the Board in making the appropriate decision.

Both the September deadlines are federal fiscal year deadlines and when the American Recovery and Reinvestment Act funding was proposed by the President soon after he was elected into office in 2008, it was for 'shovel-ready' projects. The District staff, during the funding application process, must have known that the projects must be at a point where they should be able to initiate construction, i.e., have all the requisite construction documents and specifications ready for bids and contractor selection, and complete substantial portion of the construction once the funding was received. As is the case, it is often difficult to predict whether the funding will materialize or not.

The underlying premise in the Board member's statement is about advance planning and communication. It is the obligation of District management and staff as the operational and administrative arm of the District to present all information and enable the Board, the policy and decision-making body of the District. Presenting all issues of the project provide opportunities for full discussion in the public-sphere and possibly timely decision-making. Projects that are unplanned or poorly planned have a direct impact on the Board's public obligation. The Board of Directors' obligation to the public is achieved only when the Board is able to conduct the public's business in a participatory environment for public opinion to be expressed and included.

RECOMMENDATIONS

Please note that these recommendations have limitations because they are based only on reviews of documents and information provided by staff for one contract. Additionally, the reviewer does not have the knowledge or experience in water treatment facility scope development, design, and construction. However, the recommendations are based on industry standards (Project Management Institute, Construction Management Association of America, National Contract Management Association, American Society of Civil Engineers, Construction Specifications Institute, and the Institute of Management Consultants) and best practices for project management, public contracts management and administration, public works construction, public finance and accounting, organizational behavior and development, and public administration.

The review recommends that District perform a review of its project management capabilities and practices for all projects and contracts. After the review if the District finds that other projects and contracts are managed, administered and controlled like the BVC contract, the following recommendations could be beneficial to the District. A few recommendations, like additional sections/language for the Standard Agreement are included with the analysis of the finding. The recommendations have been organized under three categories:

1. Project management and Contract Administration related recommendations
2. Board related recommendations
3. Other recommendations

1. Project management and contract administration related recommendations

General recommendations

The ARWTP project was managed by project managers or senior project managers from two different units and most of their skills and experience were/are in engineering. One unit handled the design phase and another managed the construction phase of the project. The recommendation is to have one team manage the entire project from initiation to completion and hand over the project to the Asset Management Unit, Operations and Maintenance Units, or other appropriate unit when the Project becomes an Asset if it is a physical project or a Knowledgebase if it is information.

The District could benefit from restructuring the project management review and reporting functions whereby all projects are reviewed by an independent functional unit/program (Project Management Program or PMP) prior to submittal to the CEO or Board for approval. The PMP would be responsible for monitoring and analyzing all District projects (incl. contracts) above $5,000, establish project management standards, methodologies, polices, processes, procedures, documents, and provide training and certification to District staff.

The PMP would report the status of all projects to the CEO and the Board each month. Project management and contract administration, including changes, would be the responsibility of the Watersheds, Water Utility, and Administration Unit Managers and the Project Managers or Senior Project Managers and require approval from the respective Division Chief, concurrence from the proposed new unit/program, and approval from the CEO, and the Board based on District policy and authority limits.

Senior project managers, project managers, and project coordinators/administrators must be certified by the PMP[9] before they take on those respective responsibilities. The District can establish thresholds of dollar levels and complexity for the various District classifications to manage projects. Staff who manage projects or contracts above $25,000 (individual or cumulative) must be certified by the PMP. Proposed projects should be considered for solicitation and procurement only after concurrence from the PMP. Project managers must be required to report each project's progress from inception to closeout and receive approval for key phases or elements. For example, a scope-change/contract amendment that requires either CEO/BAO or Board approval must receive concurrence of the PMP and prior to other approvals.

Require every project's status to be presented to the PMP each month along with a report to the CEO/BAO and the Board, in alignment with Board policies and Executive Limitations. Reporting to the CEO/BAO and the Board could be performed by the PMP.

Specific project and contract management/administration recommendations

1. Until the District establishes a robust project/program management function require all projects to be initiated and managed with a minimum level of documentation as prescribed by PMI (Project Management Institute).
2. Establish a checklist of documents required for every project.
3. The documents must go through the chain of reviews mentioned in the General recommendations before finalization/acceptance to move to the next step.
4. Projects should not be approved for initiation, planning, or subsequent phases, including Board approval without adequate documentation.
5. Establish a process whereby the project manager has to establish and obtain concurrence from the PMP, of detailed workload and expertise matrices to justify the lack of staff availability or expertise prior to RFP solicitation process.
6. Require every project manager to develop a complete project framework document along with prospective phases before a project is approved for contracts or procurement processing to solicit responses/proposals.
7. Require all project plans to be developed based on the same/similar phases with variations when necessary. For example management consulting projects would have different phases from a software development projects or capital construction projects.. Develop phasing parameters so that phase creep can be avoided and managed well if and when it happens. Phasing consistency ensures better project management and oversight.
8. Conduct scenarios, alternatives, options, and risk analyses for every project.
9. Require all contracts administered by staff or managers to have minimum reporting requirements to the PMP, Chiefs, CEO, and Board.
10. Establish nexus between mid-year and annual reviews and project management/contract administration performance.
11. Require project managers to send project documents to the Records Management Unit / Library for knowledgebase development.

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[9] The certification might entail not only taking classes in project management or contract administration, but also include case study analysis of existing projects, use of various project management tools, and a minimum number of years of experience managing projects or contracts under $25,000.

Scope of services and Consultant evaluation

1. Until the District has a robust project/program management function planning and design phases must be separated and bid to different consultants.
2. Develop detailed requirements for each phase as part of the project plan so that Scope of Work/Services can be appropriately categorized into the standard phases.
3. Require knowledge transfer as one of the tasks in every project that uses consultant services.
4. Establish values and importance of criteria.
5. Establish scoring models with categories of criteria. Although the principles behind scoring models are relatively simple, developing an effective model can be a very lengthy and time-consuming endeavor. The District would need to carefully select, word, operationally define, and test each criterion for validity and reliability.
6. Criteria could be broken down to three or four sub-criteria with weights or scores into fractions. Such an approach is called an Analytical Hierarchy Process (AHP). While the scoring model is a one-level process, the AHP is a multi-level process which uses a hierarchy of criteria. AHP enables cause-effect explanations between goal (e.g., select best proposal), criteria (e.g., technical knowhow), sub-criteria (e.g., probability of success), and the various proposals. The criteria and sub-criteria are weighted and a composite score for each proposal at each level is established with an overall score. Higher the overall score, higher the probability of selection.
7. Target interview questions to understand the proposal's ability to meet the District needs. Avoid questions that lead to answers that provide opinions. Keep questions relevant to the scope of work the consultant will be expected to perform.

Cost planning, estimation, and analysis

1. Establish a cost planning and estimation function at the District.
2. Train project managers in project cost planning, estimating, and cost control.
3. Require all projects to include a cost planning map, along with cost estimates (analogous/parametric/bottom-up) and baselines.
4. Require project managers to use the cost baseline tool so that project budgets, especially time-phased budgets can be measured and monitored for cost performance. Cost baselines are useful not only for cost performance measurement but also for cash flow forecasting.
5. Develop, establish, and require all project managers to use cost control tools – earned value analysis and milestone analysis.
6. Establish and require milestone and cost analysis reporting on every project.
7. Require risk logs and summary progress reports for every project.

Contract Administration, analysis, and reporting

1. Establish a checklist and criteria for all contracts being administered by the project manager or staff.
2. Establish standard phases for contract administration, with exception where necessary.
3. Require change in scope, deliverable, schedule, or cost of all projects to be approved by the PMP prior to CEO or Board approval.
4. Require monthly reports of the status all projects, including post-implementation findings, to PMP and CEO and those beyond the CEO's authority be reported to the Board.

2. Board related recommendations

1. Until the PMP is established, require project managers to report monthly, all projects' status

beyond the CEO's authority to the Board.

2. Establish checklist and criteria for reporting various aspects of projects beyond the CEO's authority to the Board. Bring project to the Board for action only after the full scope of the project has been defined and at the beginning and end of each phase.
3. While requesting action on projects, communicate the various analyses along with competing factors to the Board.
4. Develop a road map of contract phasing so that the Board is aware of the various dependencies and can anticipate when District staff might bring a contract for amendments to add work to the scope as a result of subsequent phases or dependencies. For example, in the initial Scope of Work document in the RFP, the construction services and training tasks could be included as work that might be added to the contract depending on the performance of the prior phases and the decisions after the final design phase.
5. Require change in scope, deliverable, schedule, or cost of all projects (beyond the CEO's authority) to be reported to the Board. If the change's value or cost is beyond the CEO's authority require Board approval.
6. No project should be brought to the Board without a minimum of three meetings prior to the required decision. Some projects might require expedited decisions and such projects could be categorized separately but they must meet minimum criteria and approval by the PMP prior to being put on the Board calendar.

3. Other recommendations

1. Invest and employ information technology solutions to manage projects and contracts. Microsoft Project and Project Server are commonly used software to manage projects. The District could also use other project management software like Primavera, however, those are less popular, more expensive, and might not be compatible with Microsoft products or systems.
2. Include project management and contract administration as duties in job descriptions or appropriate classifications.
3. Integrate budget planning, reporting, and approval, along with commitment controls, into project management and contract administration of projects.
4. Upgrade PeopleSoft Financials to integrate with project management software and budget planning tools and adequately configure the systems for easy data exchange, project finance reporting, and appropriate internal controls like separation of duties and approval hierarchies.

APPENDICES

Appendix 1 - RFP Package Cover letter and Attachments A-C

Appendix 2 - RFP Package Other documents

Appendix 3 - RFP Standard Agreement CO323+rev+030206

Appendix 4 - Current Standard Agreement C0323+V0803091

Appendix 5 - Sep 26, 2006 Board Agenda Memo and Original Contract's Scope of Services

Appendix 6 - Invoice Payment History

Appendix 7 - Oct 24, 2007 Board Agenda Memo and Amendment 1's Scope of Services

Appendix 8 - Oct 27, 2009 Board Agenda Memo and Amendment 2's Scope of Services

Appendix 9 - Oct 29, 2010 Board Agenda Memo and Amendment 3's Scope of Services

Appendix 10 - Capital Program's ISO (International Standards Organization) Procedures and Work Instructions List